Service Manual
MG370/KG370

Model : MG370/KG370

Date: October, 2007 / Issue 1.0

REVISED HISTORY

Editor	Date	Issue	Contents of Changes	S/W Version

The information in this manual is subject to change without notice and should not be construed as a commitment by LGE Inc. Furthermore, LGE Inc. reserves the right, without notice, to make changes to equipment design as advances in engineering and manufacturing methods warrant.

This manual provides the information necessary to install, program, operate and maintain the MG370.

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1. INTRODUCTION

1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of the MG370

1.2 Regulatory Information

A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges you're your telecommunications services. System users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. LGE does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it. LGE will not be responsible for any charges that result from such unauthorized use.

B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the MG370 or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

D. Maintenance Limitations

Maintenance limitations on the MG370 must be performed only by the LGE or its authorized agent. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

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LGE Internal Use Only

1. INTRODUCTION

E. Notice of Radiated Emissions

The MG370 complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

G. Interference and Attenuation

An MG370 may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

H. Electrostatic Sensitive Devices

ATTENTION

Boards, which contain Electrostatic Sensitive Device (ESD), are indicated by the **sign. Following information is ESD handling:**

· Service personnel should ground themselves by using a wrist strap when exchange system boards.
· When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
· Use a suitable, grounded soldering iron.
· Keep sensitive parts in these protective packages until these are used.
· When returning system boards or parts like EEPROM to the factory, use the protective package as described.

1.3 ABBREVIATION

For the purposes of this manual, following abbreviations apply:

APC	Automatic Power Control
BB	MG370
BER	Bit Error Ratio
CC-CV	Constant Current - Constant Voltage
DAC	Digital to Analog Converter
DCS	Digital Communication System
dBm	dB relative to 1 milliwatt
DSP	Digital Signal Processing
EEPROM	Electrical Erasable Programmable Read-Only Memory
EL	Electroluminescence
ESD	Electrostatic Discharge
FPCB	Flexible Printed Circuit Board
GMSK	Gaussian Minimum Shift Keying
GPIB	General Purpose Interface Bus
GSM	Global System for Mobile Communications
IPUI	International Portable User Identity
IF	Intermediate Frequency
LCD	Liquid Crystal Display
LDO	Low Drop Output
LED	Light Emitting Diode
OPLL	Offset Phase Locked Loop
PAM	Power Amplifier Module
PCB	Printed Circuit Board
PGA	Programmable Gain Amplifier

2. PERFORMANCE

PLL	Phase Locked Loop
PSTN	Public Switched Telephone Network
RF	Radio Frequency
RLR	Receiving Loudness Rating
RMS	Root Mean Square
RTC	Real Time Clock
FEM	Front End Module
SIM	Subscriber Identity Module
SLR	Sending Loudness Rating
SRAM	Static Random Access Memory
STMR	Side Tone Masking Rating
TA	Travel Adapter
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
UART	Universal Asynchronous Receiver/Transmitter
VCO	Voltage Controlled Oscillator
VCTCXO	Voltage Control Temperature Compensated Crystal Oscillator
WAP	Wireless Application Protocol

2. PERFORMANCE

2.1 Product Name
MG370 : Support GSM

2.2 Supporting Standard

Item	Feature	Comment
Supporting Standard	GSM850/PCS1900 Dual-Band (850/1900) with seamless handover Phase 2+(include AMR) SIM Toolkit : Class 1,2,3	
Frequency Range	GSM850 TX : 824 - 849 MHz GSM850 RX : 869 - 894 MHz PCS1900 TX : 1850 - 1910 MHz PCS1900 RX : 1930 - 1990 MHz	
Application Standard	SMS : Yes	

2.3 Main Parts: GSM Solution

Item	Part Name	Comment
Digital Baseband	EGOLD voice (PMB7880)	
RF Chip	SKY77318	

2.4 H/W Features

Item	Feature	Comment
Form Factor	Clam shell type	LCD : 65K CSTN, 128 x128
Battery	Capacity Standard : Li-Ion, 750mAh(Min)	Cell Size: Standard 4.9(L)x34.2(W)x46.6(H)mm
	Packing Type: Soft Pack	
Size	Standard: 85.0 x 45.0 x 19.8 mm	LxWxH
Weight	68g	With Battery
PCB	One PCB : 6Layers, 0.8t	
AVG TCVR current (mA)	Max : 250 mA (GSM, Power Level 5) Max : 120 mA (GSM, Power Level 19)	
Standby Current	3 mA	@ Paging Period 6
Standby time	Up to 250 hours	@ Paging Period 6
Charging time	Below 3 hours	@ Power Off /1000mAh
Talk time	Min : 2.5hr@Power Level 5(GSM850) Min : 2.5hr@Power Level 0(PCS)	@ 750 mAh
RX sensitivity	GSM 850 : -108 dBm PCS : -106 dBm	Condition: conducted
TX output power	GSM 850 : 33 dBm PCS : 30 dBm	Class4 (GSM850) Class1 (PCS)
SIM card type	Plug-In SIM 3V	
Display	MAIN LCD : 65K Color CSTN (128 X128)	
	Backlight : White LED	
Keypad	Alphanumeric Key : 12 Function Key :10 Total Number of Keys : 22	Function Key: 4 Key Navigation with Confirm key, F1, F2, SND, END/PWR, Clear

Item	Feature	Comment
Antenna	Built in antenna Type	Dual-band
System connector	18 Pin	
Ear Phone Jack	18 Pin	
PC synchronization	Yes	Data cable (option)
Memory	Flash : 64Mbit / UtRAM : 32Mbit	SEC (Samsung)
Speech coding	FR, EFR, HR, AMR	
Data & Fax	No	
Vibrator	Built in Vibrator	
MIDI (for Buzzer Function)	16 Poly (ADPCM real music tone)	
Voice Recording	Yes	
Travel Adapter	Yes	
Options	Ear-Microphone Cigarette Lighter Adapter Data Cable	

MG370a, MG370b,KG370,KG375 Function difference

	RF Band	GSM900/ DCS1800			GSM850/ PCS1900
Design	Market	Europe	Asia / CIS	Latin America	Latin America
	Without FM Radio	KG375	-	-	-
	With FM Radio	-	KG370	MG370b	MG370a

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Item	Feature	Comment
RSSI	0~6 level	
Battery Charging	0~4 level	
Key Volume	0~5 level	
Effect sound volume	0~5 level	
Audio Volume	0~5 level	
Time/Date Display	Yes	
Multi-language	Yes	English /Spanish /Portuguese
Quick Access Mode	Yes	Profiles / Phonebook Calendar / Message
PC Sync	Yes	
Speed Dial	Yes	8EA
Speaker Phone	Yes	
CLIP/CLIR	Yes	
Phonebook	Yes	Total 300 members
Last Dial Number	Yes	10EA
Last Received Number	Yes	10EA
Last Missed Number	Yes (10)	10EA
Search Number/Name	Name only	
Group	No	
Fixed Dial Number	Yes	
Service Dial Number	Yes	
Own Number	Yes	
Voice Memo	Yes	30sec
Call Remainder	Yes	
Network Selection	No	

Item	Feature	Comment
Call Divert	Yes	
Call Barring	Yes	
Call Charge (AoC)	Yes	
Call Duration	Yes	
SMS	100	
EMS melody/Picture Send/ Receive/ Save	No	
SMS Over GPRS	No	
E-Mail	No	
Long Message	Yes	Max. 459 Characters
Cell Broadcast	Yes	
Download Melody / Wallpaper	Yes	
Game	Yes	
Calendar	Yes	
Memo Pad	Yes	
World Clock	Yes	
Unit Convert	Yes	
Fax & Data	No	
Wall Paper	Yes	Default 3EA
WAP Browser	No	
Download	No	
SIM Lock	Yes	Operator Dependent
SIM Toolkit	Class 1, 2, 3	
MMS	No	
AMR	Yes	
CPHS	Yes	
Hold / Retrieve	Yes	
Conference Call	Yes	Max. 6
DTMF	Yes	

3. TECHNICAL BRIEF

3.1 Digital Main Processor(PMB7880)

Figure. 3-1 PMB7880 FUNCTIONAL BLOCK DIAGRAM

3.1.1 Overview of E-GOLDvoice

The E-GOLD voice is a GSM base band modem including RF transceiver covering the low bands GSM850 /GSM900 and high bands GSM1800 / GSM1900 bands. E-GOLD voice is Dual Band, therefore, it supports by default a low / high pair of bands at the same time:

1. GSM850 / GSM1800
2. GSM850 / GSM1900
3. GSM900 / GSM1800
4. GSM900 / GSM1900

The E-GOLD voice is optimized for voice-centric Mobile Phone applications.

The E-GOLD voice is designed as a single chip solution that integrates the digital, mixed-signal, RF functionality and a direct-to-battery Power Management Unit.

The transceiver consists of:
- Constant gain direct conversion receiver with an analog I/Q base band interface
- Fully integrated Sigma/Delta-synthesizer capability
- Fully integrated two-band RF oscillator
- Two-band digital GMSK modulator with digital TX interface
- Digitally controlled crystal oscillator generating system clocks.

The E-GOLD voice supports a direct battery connection, hence eliminating the need for an external Power Management Unit. The E-GOLD voice has different power down modes and an integrated power up sequencer.

The E-GOLD voice is powered by the C166®S MCU and TEAKLite® DSP cores. The operating temperature range from -40°C to 85°C. It is manufactured using the 0.13 μm CMOS process.

3. TECHNICAL BRIEF

3.1.2 Features

▶ Baseband
  · High performance fixed-point TEAKlite DSP
  · C166S high performance microcontroller
  · There are several Interfaces:
    - I2S interface for DAI connections (for Tape Approval)
    - High Speed SSC Interface for connection of external peripherals
    - SIM Interface
    - Keypad Interface (6x4 or 5x5 keys)
    - EBU for external RAM/FLASH connection
    - Asynchronous serial interface
    - JTAG Interface
    - Black & white and color displays are supported
    - PWM source to drive vibrator
    - Keypad and display backlight supported.

▶ Receiver
  · Constant gain, direct conversion receiver with fully integrated blocking filter
  · Two integrated LNAs
  · No need of interstage and IF filter
  · Highly linear RF quadrature demodulator
  · Programmable DC output level
  · Very low power budget.

▶ Transmitter
  · Digital Sigma-Delta modulator for GMSK modulation, typical -163.5 dBc/Hz@20 MHz
  · Single ended outputs to PA, Pout = +3.5 dBm
  · Very low power budget.

▶ RF-Synthesizer
  · $\Sigma\Delta$Synthesizer for multi-slot operation
  · Fast lock-in times (< 150 μs)
  · Integrated loop filter
  · RF Oscillator
  · Fully integrated RF VCO.

▶ Crystal Oscillator
  · Fully digital controlled crystal oscillator core with a highly linear tuning characteristic.

▶ Mixed Signal and Power Management Unit
  · DC/DC boost for voltages up to 15V for driving White or Blue LEDs
  · 8-Ohm loud speaker driver (250/350mW)
  · 16-Ohm earpiece driver
  · 32-Ohm headset driver
  · 4 measurement interfaces (PA temperature, battery voltage, battery temperature, and ambient temperature)
  · Differential microphone input
  · System start up circuitry
  · Charger circuitry for NiCd, NiMh and LiIon cells
  · Integrated regulators for direct connection to battery.

3. TECHNICAL BRIEF

3.1.3 GSM System Description

The E-GOLD voice is suited for mobile stations operating in the GSM850/900/1800/1900 bands.
In the receiver path the antenna input signal is converted to the baseband, filtered, and then amplified to target level by the RF transceiver chipset.
Two A-to-D converters generate two 6.5 Mbit/s data streams. The decimation and narrowband channel filtering is done by a digital baseband filter in each path.

The DSP performs:
1. The GMSK equalization of the received baseband signal (SAIC support available)
2. Viterbi channel decoding supported by an hardware accelerator.

The recovered digital speech data is fed into the speech decoder.
The E-GOLD voice supports fullrate, halfrate, enhanced fullrate and adaptive multirate speech CODEC
algorithms. The generated voice signal passes through a digital voiceband filter. The resulting 4 Mbit/s data stream is D-to-A converted by a multi-bit-oversampling converter, postfiltered, and then amplified by a programmable gain stage. The output buffer can drive a handset ear-piece or an external audio amplifier, an additional output driver for external loud speaker is implemented.
In the transmit direction the differential microphone signal is fed into a programmable gain amplifier. The prefiltered and A-to-D converted voice signal forms a 2 Mbit/s data stream. The oversampled voice
signal passes a digital decimation filter.
The E-GOLD voice performs speech and channel encoding (including voice activity detection (VAD) and discontinuous transmission (DTX)) and digital GMSK modulation. In the RF transceiver part, the baseband signal modulates the RF carrier at the desired frequency in the 850 MHz, 900 MHz, 1.8 GHz, and 1.9 GHz bands using an I/Q modulator. The E-GOLD voice supports dual band applications. Finally, an RF power module amplifies the RF transmit signal at the required power level. Using software, the E-GOLD voice controls the gain of the power amplifier by predefined ramping curves (16 words, 11 bits). For baseband operation, the E-GOLD voice supports:

   • Making or receiving a voice call

   • Sending or receiving an SMS.

3.1.4 PMU Details

The E-GOLD voice includes battery charger support (various sensor connections for temperature, battery technology, voltage, etc.) and a ringer buffer. E-GOLD voice avoids the need for an external power management component because its internal power management unit contains:

- Voltage regulators for the On-chip and Off-chip functional blocks
- Charger circuitry for NiCd, NiMh and LiIon cells.

3.1.5 Bus Concept

The E-GOLDvoice has two cores (a microcontroller and a DSP), each with its own bus.
There is an interconnection between the TEAKlite bus and the C166S X-Bus.

3.1.6 C166S Buses

The C166S is connected to three buses:
1. Local Memory (LM) bus
2. X-Bus
3. PD-Bus.

3.1.7 TEAKLite Bus

The TEAKlite is connected to the TEAKlite bus.

3.1.8 Bus Interconnections

The interconnection between the X-Bus and the TEAKlite Bus uses:
- Multicore Synchronization
- Shared Memory.

3.1.9 Clock Concept

The E-GOLD voice has a flexible clock control.

3.1.10 Interrupt Concept

The C166 MCU carries out the E-GOLD voice interrupt system.

3.1.11 Debug Concept

The E-GOLD voice includes a multi-core debug. The C166 and TEAKlite cores can be debugged in parallel with:
- A single JTAG port (that is, on a single host)
- Mutual breakpoint control.

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3.1.12 C166 Debug Concept

The debugging of the C166 uses the OCDS and the Cerberus.

3.1.13 TEAKLite Debug Concept

TEAKlite debugging uses the OCEM and the SEIB.

3.1.14 Power Management

The E-GOLDvoice provides the power management unit (PMU) for the complete mobile phone application. The integrated PMU is directly connected to the battery and provides a set of linear voltage regulators (LDO's). These LDO's generate all required supply voltages and currents needed in a low feature mobile phone. A charger control circuit charges NiCd, NiMH and LiIon batteries. The charger control supports hardware controlled pre-charging and software controlled charging. It offers a wide charger voltage range, making half wave/ full-wave charging with cheap transformers possible. White/blue backlight generation is supported with a special driver for very a low external parts count. Power consumption during operation phases is minimized due to flexible clock switching In the Standby Mode most parts of the device are switched off, only a small part is running at 32kHz and the controller RAM is switched to a power saving mode. The TEAKLite ROM can be switched off during Standby via SW.

3.1.15 On-Chip Security Concept

Secure boot is based on a public/private key approach. Flash images that are not signed with the private key during phone manufacture cannot be loaded. Verification of the Flash code is done with the public key. The public key as well as hash and verify algorithms are stored in the ROM, which ensures a hardware secured boot procedure.

The following security features are supported:
- Prevention of illegal Flash programming
- Flash programming makes use of the E-GOLD voice ID for personalization checks with IMEI and SIM-lock protection

The security features use the following mechanism:
- Boot ROM flow:
  - Controls the boot transition to external flash
  - Controls the flash update
- Flash tied to the individual chip via an ID using e-fuses, that is, each E-GOLD voice chip has its own fused ID.

Further details on the E-GOLD voice security concept are not publicly documented

3.1.16 Asynchronous Operation Mode Concept

The E-GOLD voice can operate in either:

- The traditional synchronous mode with the 26MHz system clock synchronized on the base station
- A special asynchronous mode (XO concept).

In the asynchronous mode the 26MHz clock input is not synchronized with the base station; the residual frequency offset is compensated in the digital signal processing domain. This processing includes frequency and timing compensation of the baseband and voiceband signals.

3.1.17 Receiver Antenna Bar Display

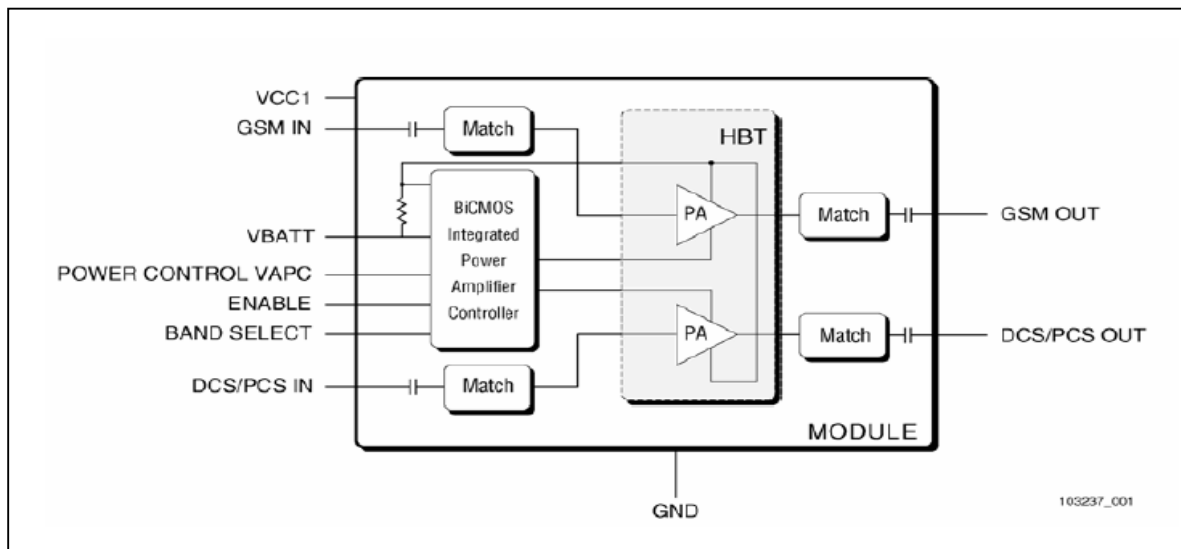|	Antenna Bar Number	RX Power (dBm)
Antenna display	5->4	-88dBm~ -84dBm
	4->3	-93dBm~ -89dBm
	3->2	-98dBm~ -94dBm
	2->1	-103dBm~ -99dBm
	1->0	-107dBm~ -103dBm

3.2 Power Amplifier Module (SKY77318)

Figure. 3-2 SKY77318 FUNCTIONAL BLOCK DIAGRAM

The SKY77318 Power Amplifier Module (PAM) is designed in a low profile (1.2 mm), compact form factor for quad-band cellular handsets comprising GSM850/900, DCS1800, and PCS1900 operation. The PAM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation.

The module consists of separate GSM PA and DCS1800/PCS1900 PA blocks, impedance-matching circuitry for 50 Ω input and output impedances and a Power Amplifier Control (PAC) block with an internal current-sense resistor. The custom BiCMOS integrated circuit provides the internal PAC function and interface circuitry. Fabricated onto a single Gallium Arsenide (GaAs) die, one Heterojunction Bipolar Transistor (HBT) PA block supports the GSM bands and the other supports the DCS1800 and PCS1900 bands. Both PA blocks share common power supply pins to distribute current.

The GaAs die, the Silicon (Si) die, and the passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.
RF input and output ports of the SKY77318 are internally matched to a 50 load to reduce the number of external components for a quad-band design. Extremely low leakage current (2.5 μA, typical) of the dual PA module maximizes handset standby time. The SKY77318 also contains band select switching circuitry to select GSM (logic 0) or DCS/PCS (logic 1) as determined from the Band Select (BS) signal.

In Figure 1 below, the BS pin selects the PA output (DCS/PCS_OUT or GSM_OUT) and the Analog Power Control (VAPC) controls the level of output power.

The VBATT pin connects to an internal current-sense resistor and interfaces to an integrated power amplifier control (iPAC™) function, which is insensitive to variations in temperature, power supply, process, and input power.

The ENABLE input allows initial turn-on of PAM circuitry to minimize battery drain.
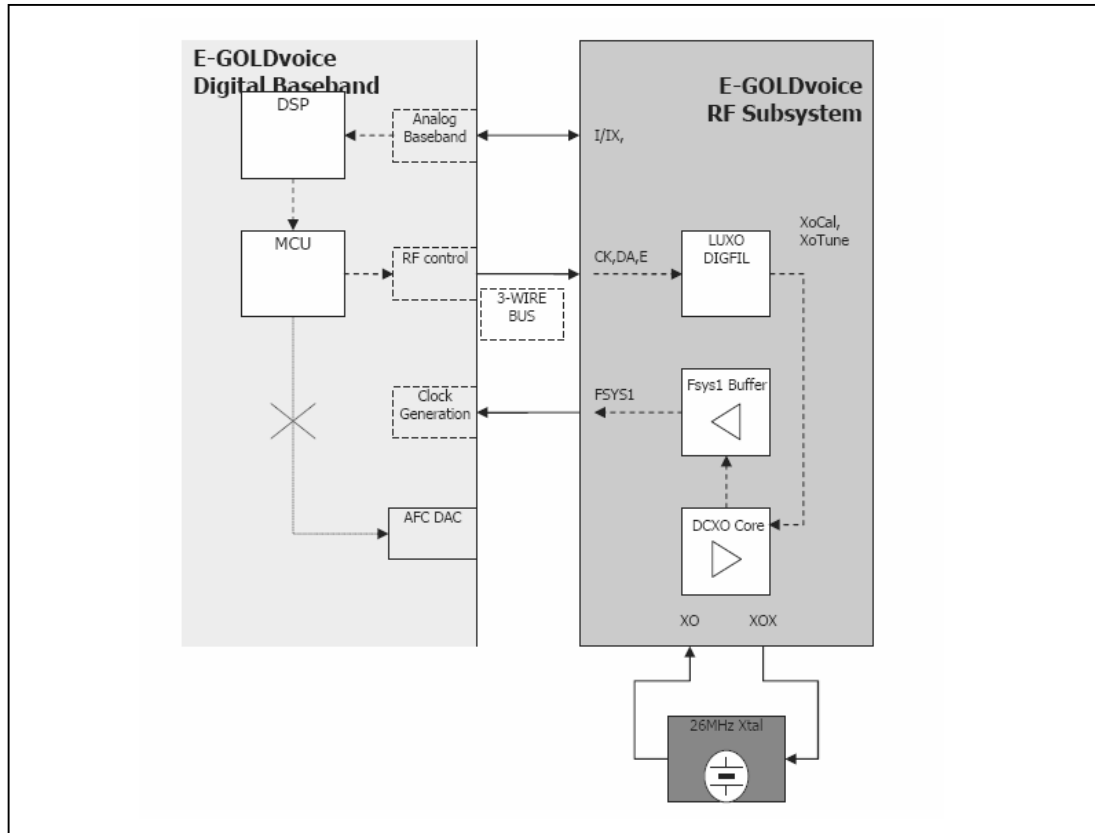
3.3 26 MHz Clock (DCXO)

Figure. 3-3 E-Glod Voice DCXO Overview

DCXO (Digitally Controlled Crystal Oscillator) and VCTCXO (Voltage Controlled Temperature Compensated Crystal Oscillator) are two different techniques used to maintain the mobile's reference oscillator's accuracy over time. The reference oscillator's accuracy over time will vary due to initial crystal frequency offset, temperature drift and aging. These static and dynamic frequency variations have to be compensated, otherwise the mobile would be in danger of losing connection to the network. The technique used to perform the frequency compensation is generally termed Automatic Frequency Control (AFC). To summarize the operation of DCXO, GSM Baseband processor will calculate the AFC compensation (which is continuously updated) required based on the measured frequency error. Then the required AFC compensation is sent to the LUXO (Lineari-Zation Unit of Crystal Oscillator), which in turns control the DCXO core and generates the 26MHz system clock.
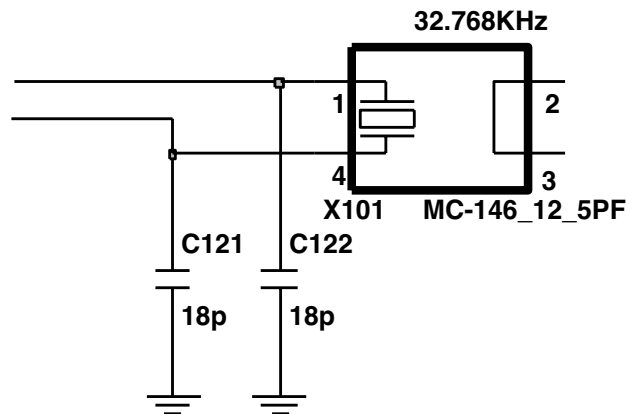
3.4 RTC(32.768KHz Crystal)

Figure. 3-4 E-Gold Voice RTC Interface

The integrated Real Time Clock (RTC) is able to provide programmable alarm functions and external interrupts. Due to its extreme low power consumption the RTC can be supplied from a small backup battery. This allows the generation of external interrupts, even when the main PMB7880 supply voltage is switched off. For this purpose the RTC is powered by own voltage supply pins VDD_RTC and VSS_RTC.

The RTC shall be driven by a 32.768 kHz (32k) clock which needs to be applied via the PMB7880 F32K and OSC32K pins. The clock can be fed from either an external clock source or use the on chip 32 KHz oscillator module.

The low clock frequency and the optimized low power design give the possibility to run the chip with a minimum of power dissipation. For example, for this specific application the 26 MHz reference oscillator can be switched off during system standby and a low- power time reference can be kept when the 32k clock is provided to the RTC.

The RTC consists of an PMB7880 specific RTC shell, containing the RTC macro, as well as the 32 kHz oscillator, as described in the following sections. The module RTC Shell solely performs level translation of the 32KHz clock to the VDD_LD1 power supply domain, and is not functionally associated with the RTC.

3.5 LCD Interface(3-wire SPI interface)

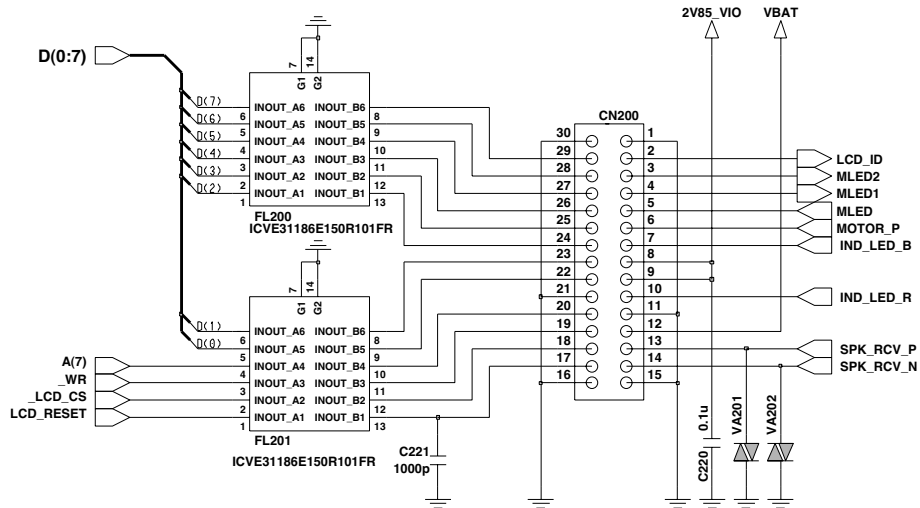**Figure 3-5-1. LCD Interface**

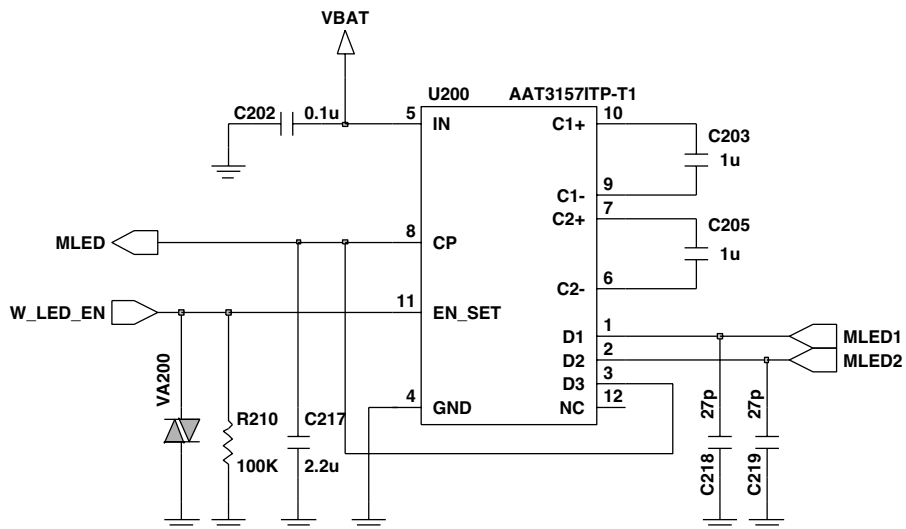**Figure 3-5-2. Charge pump interface**

Signals	Description
_LCD_CS	This signal enable to access to the driver IC of LCD.
D[0:7]	This signal transfer 8bit parallel data to driver IC.
A(7)	Data / Command switch
LCD_RESET	This signal makes driver IC to HW default status.
MLED	This signal provide power to white LEDs.
MLED1/2	The white LED current sink ports
2V85_VIO	This signal provides power to LCD modules.(2.8V)

The AAT3157 is a low noise, constant frequency charge pump DC/DC converter that uses a tri-mode load switch (1X), fractional (1.5X), and doubling (2X) conversion to maximize efficiency for white LED applications. The AAT3157 is capable of driving up to three channels of LEDs at 20mA per channel from a 2.7V to 5.5V input.

The current sinks may be operated individually or in parallel for driving higher current LEDs. A low external parts count (two $1\mu F$ flying capacitors and two small $1\mu F$ capacitors at VIN and VOUT) make this part ideally suited for small, battery-powered applications. Analogic Tech's S2Cwire™ (Simple Serial Control™) serial digital input is used to enable, disable, and set current for each LED with 16 settings down to $50\mu A$.

The low-current mode supply current can be as low as $50\mu A$ to save power.

Data	Output (mA/Ch)	Data	Output (mA/Ch)
1	20.0	9	5.0
2	17.0	10	4.2
3	14.0	11	3.4
4	12.0	12	2.8
5	10.0	13	1.0
6	8.6	14	0.5
7	7.0	15	0.1
8	6.0	16	0.05

Figure 3-5-3. Charge pump Output Current

3.6 SIM Card Interface
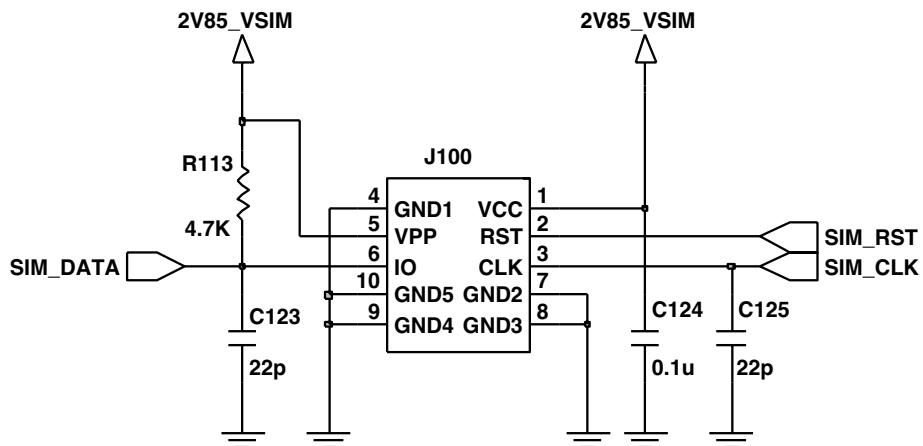
Figure 3-6. SIM CARD Interface

The E-Gold Voice provides SIM Interface Module. The AD6527 checks status Periodically During established call mode whether SIM card is inserted or not, but it doesn't check during deep sleep mode. In order to communicate with SIM card, 3 signals SIM_DATA, SIM_CLK, SIM_RST.

Signals	Description
SIM_RST	This signal makes SIM card to HW default status.
SIM_CLK	This signal is transferred to SIM card.
SIM_DATA	This signal is interface datum.

3.7 KEYPAD Interface
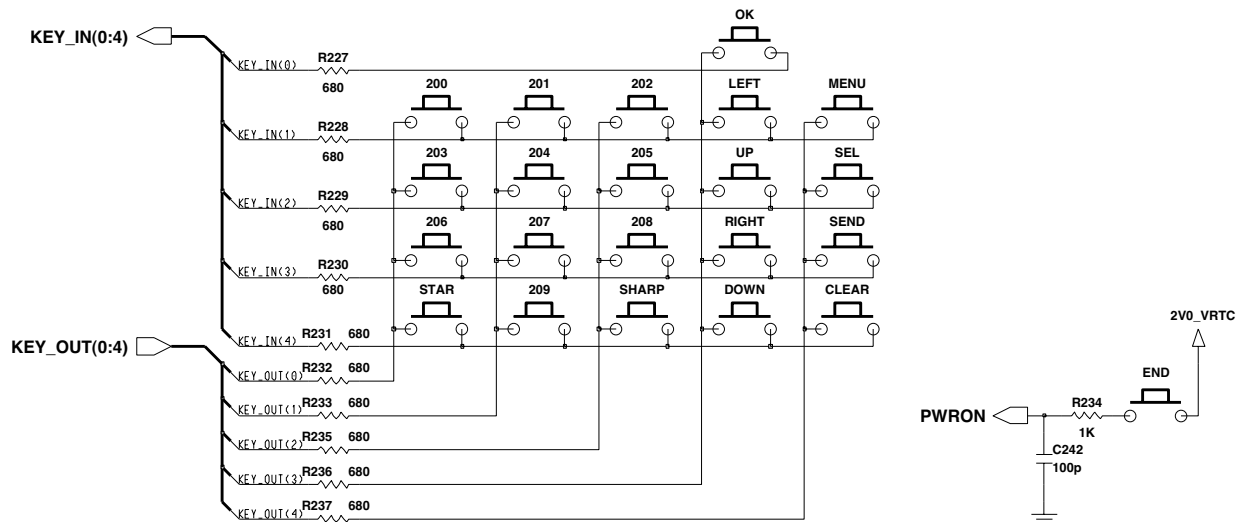
Figure 3-7 KEY MAXTRIX Interface

The keypad interface is connected to the X-Bus, together with the XBIU and the shared Memory Register, using a single Bus Interface.

The keypad supports two scan modes:
  • By default, the keypad is a 5x5 scan matrix 5 input and 5 output pins).
  • To set the keypad to a 5x5 scan matrix (5 input and 5 output pins)

The scan mode should be determined at the very beginning of the system start because changes are not allowed later.

3. TECHNICAL BRIEF

3.8 Battery Charging Block Interface
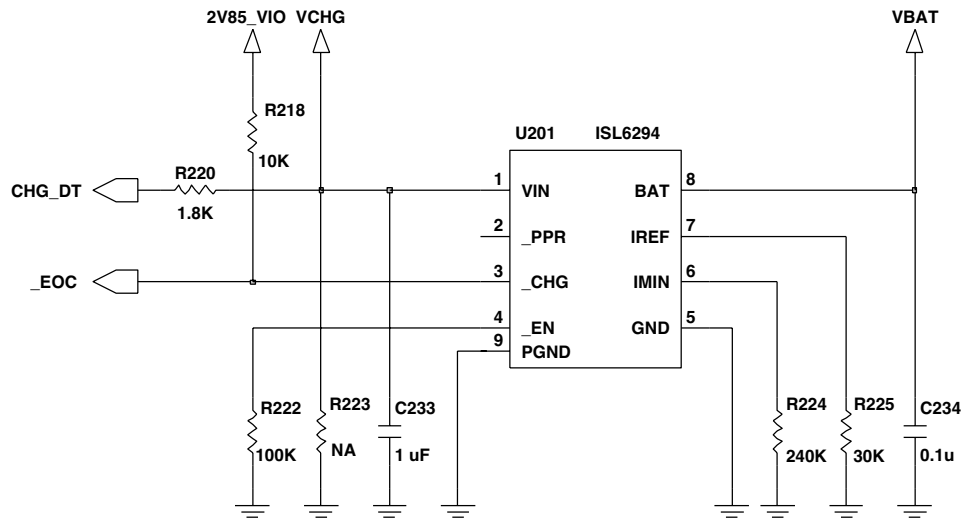
Figure 3-8. Charging IC Interface

The ISL6294 is a high performance battery charger designed to charge single cell lithiumion/polymer batteries with up to 400mA of current from an external power source.

It is a stand-alone charging solution, with just one external component required for complete functionality. The ISL6294 precisely regulates battery charge voltage and current for 4.2V lithium-ion/polymer battery cells.

The ISL6294 has four basic modes for the battery charge cycle: pre-conditioning/trickle charge; constant current/fast charge; constant voltage; and end of charge.

3. TECHNICAL BRIEF
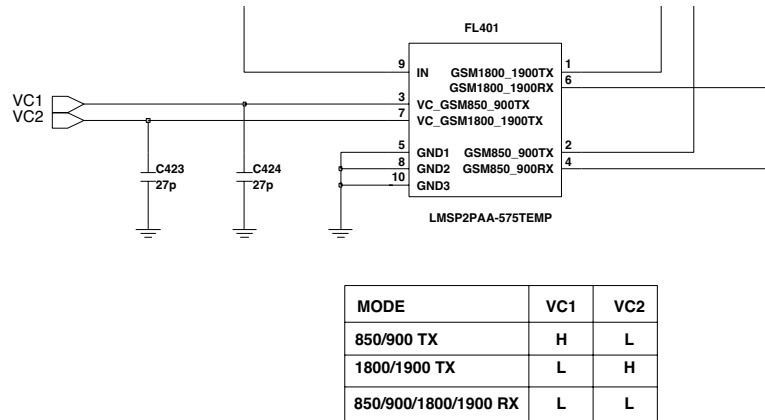
3.9 RF Interface

Figure 3-9-1. ASM interface
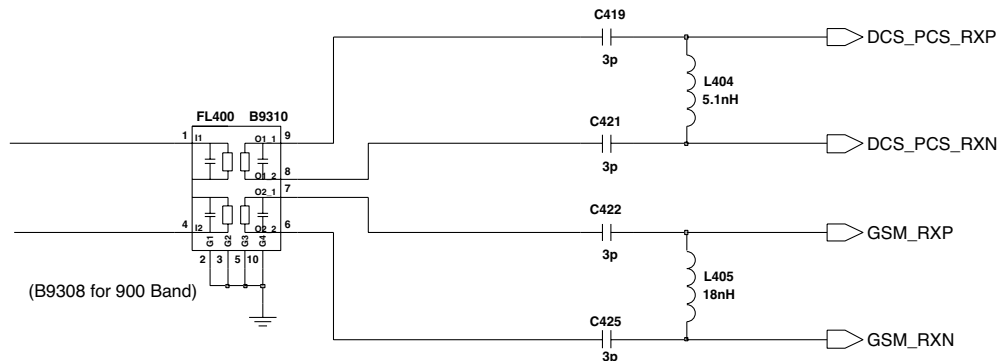
Figure 3-9-2. SAW Filter interface

E-GOLD voice features a fully integrated constant-gain direct conversion receiver, i.e. there is no interstage filter needed and the baseband level at the analogue IQ- interface follows directly the RF input level. Depending on the baseband ADC dynamic range, single- or multiple-step gain switching schemes are possible.

An integrated, selfaligning, low-pass filter ensures the receivers to function under blocking and reference interference conditions and avoids aliasing by baseband sampling. An automatic DC-offset compensation is implemented and can beswitched depending on the gain setting.

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3. TECHNICAL BRIEF
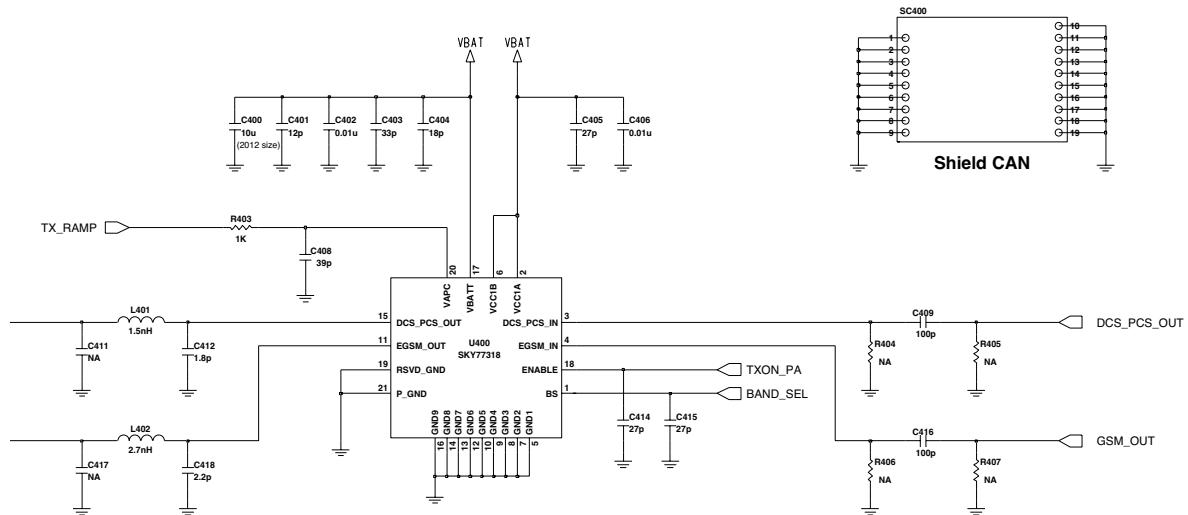
Figure 3-9-3. PAM (Power Amplifier Module) interface

The digital transmitter architecture is based on a fractional-N sigma-delta synthesizer for constant envelope GMSK modulation. This configuration allows a very low power design with a reduced external component count.

The modulation is transferred between baseband- and RF-part of the PMB7880 via a digital interface signal into the digital modulator. The following Gaussian filter shapes the digital data stream for the GMSK modulation. Additionally a pre-distortion filter compensates the attenuation of the PLL transfer function resulting in a very low distortion at the transmit output. The filtered digital data stream is scaled appropriately and added to the channel word.

This sum is fed into the MASH modulator. The output of the MASH modulator is a sequence of integer divider values representing the high resolution fractional input signal. This sequence controls the MMD (multi modulus divider) at a sample rate of 26MHz. Thus a tightly controlled frequency modulation of the VCO is achieved.

3.10 Audio Interface
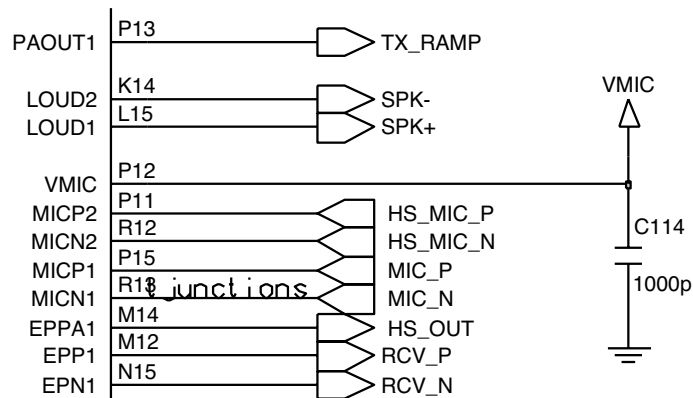
Figure 3-10-1 Audio interface

The audio front-end of E-GOLD voice offers the digital and analog circuit blocks for both receive and transmit audio operation and ringing. It features a high-quality, digital-to-analog path with amplifying stages for connecting acoustic transducers to the E-GOLD voice. In the transmit direction the supply voltage generation for microphones, low-noise amplifier and analog to digital conversion are integrated on the E-GOLD voice.

For E-GOLD voice the EPp1/EPn1 driver are used as differential Earpiece-Driver, EPPa1 is used as single-ended Headset-Driver.

The audio front-end itself can be considered to be organized in three sub-blocks:
   • Interface to processor cores (TEAKlite and - indirectly - C166S)
   • Digital filters
   • Analog part.

3. TECHNICAL BRIEF

The interface to the processor cores consists of a direct physical connection to the TEAKlite DSP bus and a set of firmware commands to handle communication between the C166S and the audio front-end which serves as the interface peripheral for audio algorithms running on the DSP or the controller. The audio front-end generates interrupts on certain occasions, for example, when exchange of data is requested. The core interface part of the audio front-end also contains the control and status registers which are used to set up certain operation modes of the peripheral.

The section next to the core interface contains the digital filters for interpolation and decimation of the audio signals being received and transmitted. The data path for the receive direction can be set up to process sampling rates between 8kHz and 48kHz.

The interpolation filters for the respective sampling rates are implemented in a dedicated hardware block and are automatically selected to suite the chosen sampling rate.

Low-pass interpolation filtering, which produces an unsigned 16-bit data stream with a sampling rate of 4 MHz, is performed digitally. D-to-A conversion, post-filtering, and final amplification are performed on the analog part. The amplifier buffer for voice-band receive does also support ringer functionality. The ringer functionality is activated by setting bits RINGSELPN or RINGSELPA in the voice-band part of the analog control register.

In transmit direction, amplification, pre-filtering and A-to-D conversion (analog $\sum \Delta$ modulation) are performed on the analog part. The resulting 2-Mbit/s data stream is filtered by a digital low-pass decimation filter for further processing by DSP firmware. Two sampling rates, 8kHz and 16kHz, are supported.

The analog section contains all the necessary analog functional blocks including microphone supply generation, output and input amplifiers and analog filtering.

Signals	Description
EPp1	Main Receiver Positive signal(Differential signal)
EPn1	Main Receiver Negative signal(Differential signal)
EPpa1	Headset signal(Single Ended signal)
Loud1	Speaker Output Positive signal(Differential signal)
Loud2	Speaker Output Negative signal(Differential signal)
MICP1	Main Microphone Positive signal(Differential signal)
MICN1	Main Microphone Negative signal(Differential signal)
MICP2	Headset Microphone Positive signal(Differential signal)
MICN2	Headset Microphone Negative signal(Differential signal)
VMIC	Main/Headset Microphone supply power
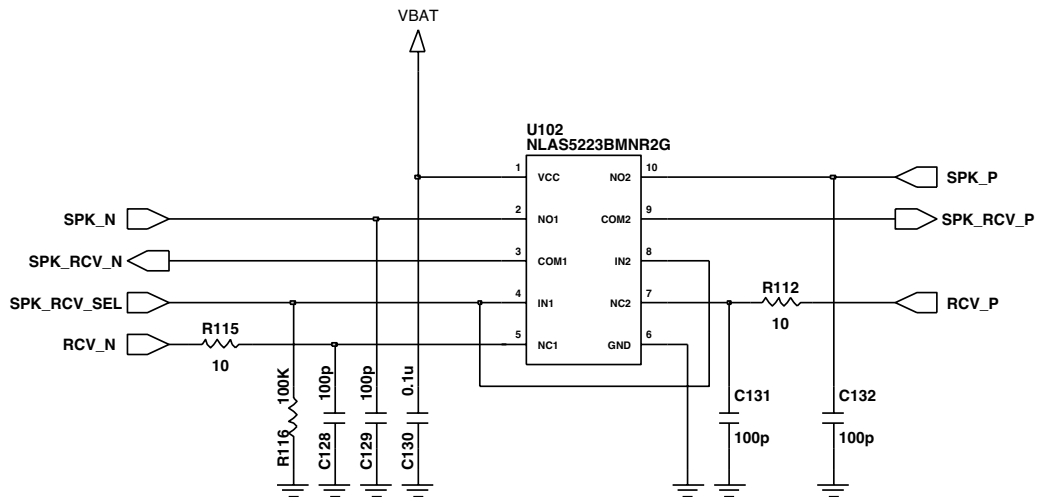
Figure 3-10-2 Main Receiver interface
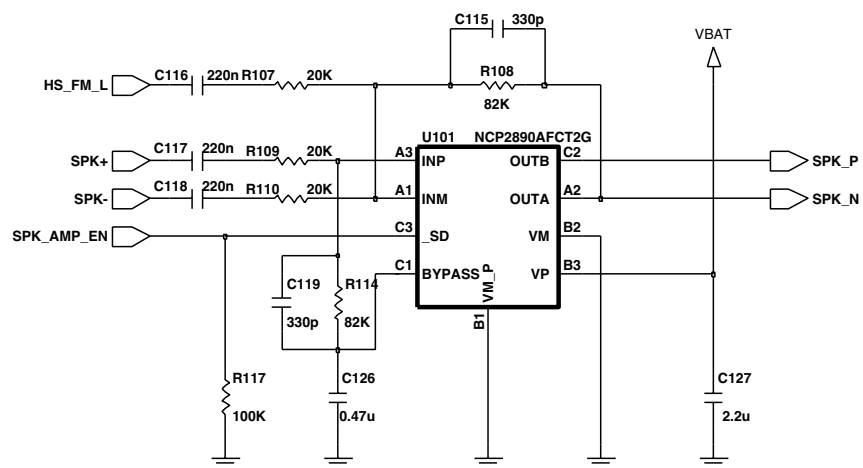
Figure 3-10-3 Main Speaker interface

3. TECHNICAL BRIEF
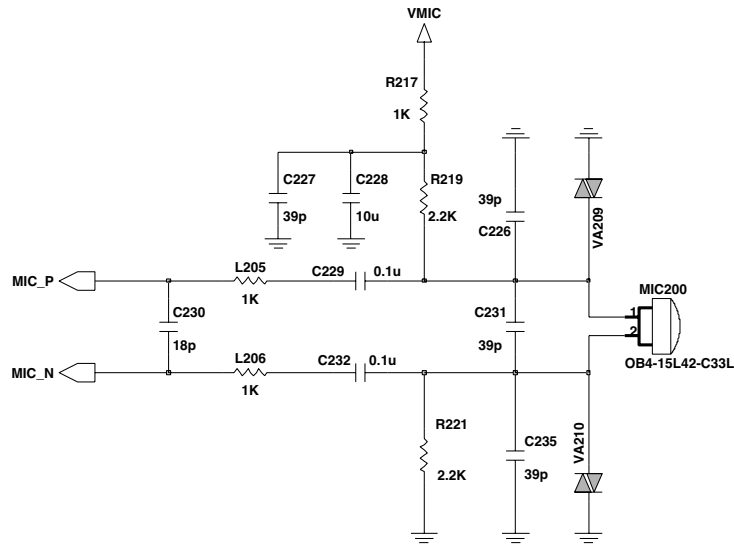
Figure 3-10-4 Main Microphone interface
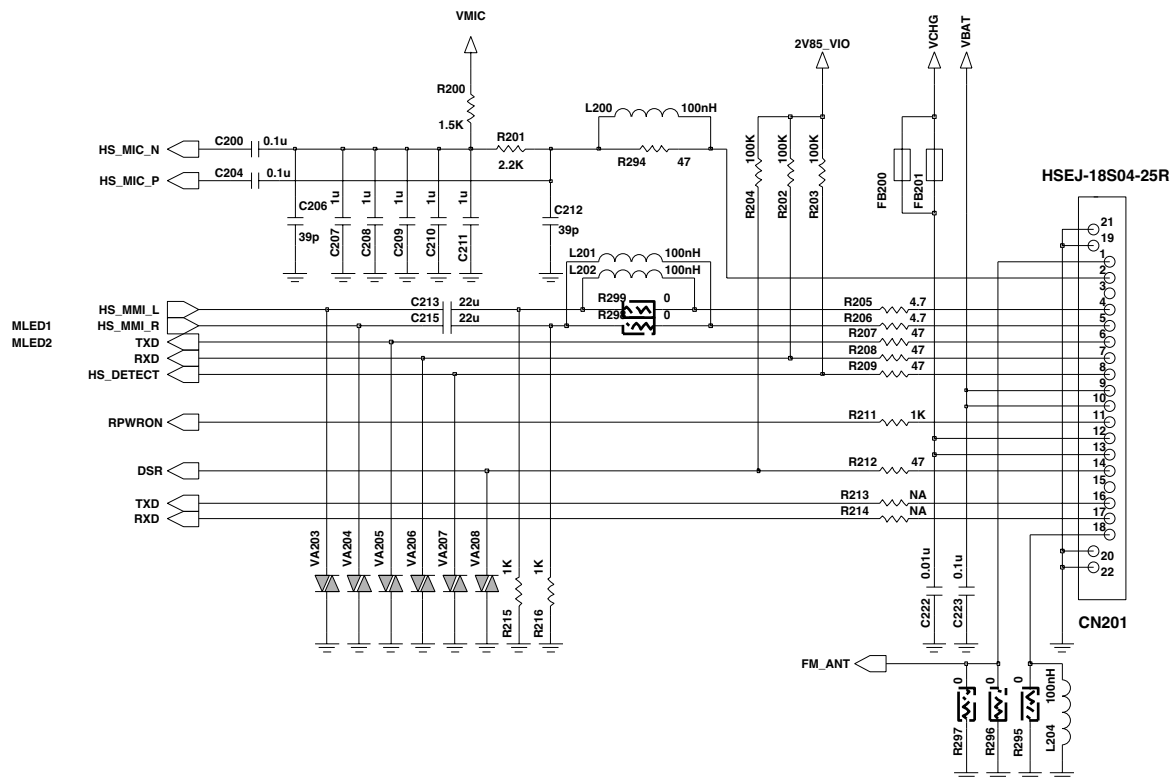
Figure 3-10-5 Headset interface

3.11 Key LED Interface
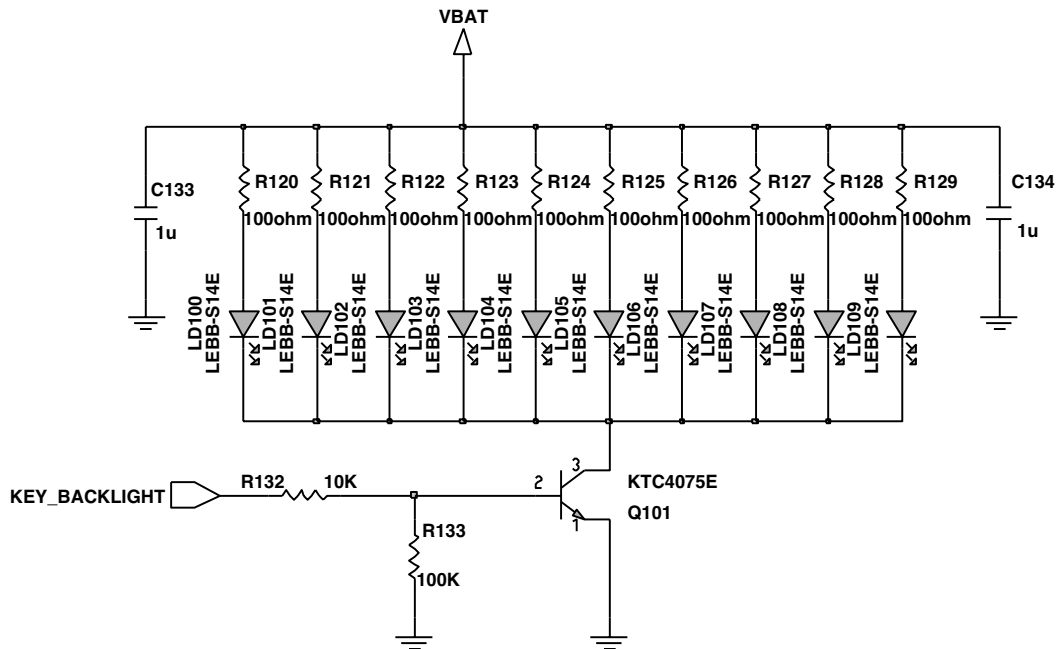
Figure 3-11 Key LED interface

This handset has 8 LEDs that illuminates blue color.
Control signal is controlled by E-Gold-voice with PWM and handset has 3 methods, ON, OFF and dimming.

3.12 Vibrator Interface
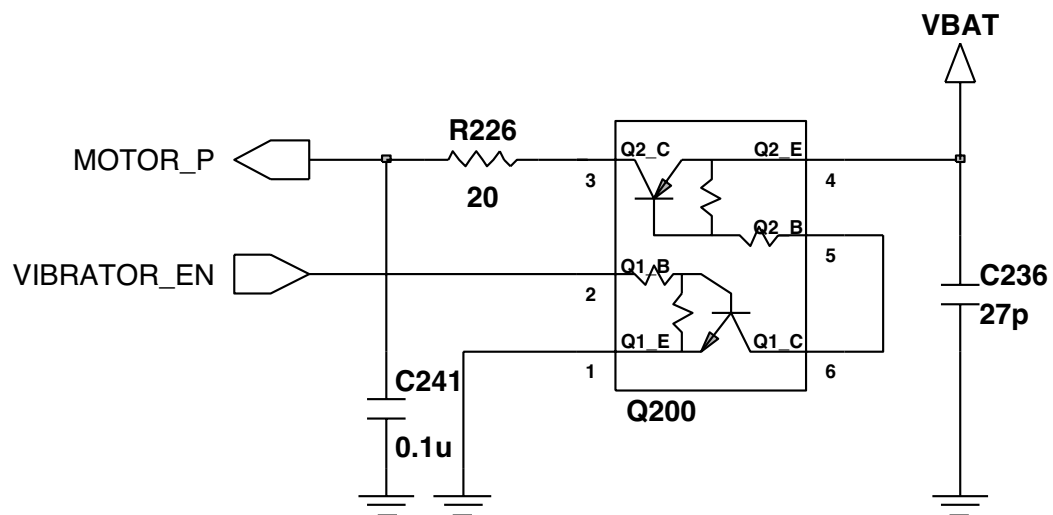
Figure 3-12 Vibrator interface

This handset has vibrator operation. VIBRATOR_EN signal is controlled by E-Gold-voice

3.13 Memory Interface

MEMORY (64M FLASH + 32M SRAM)
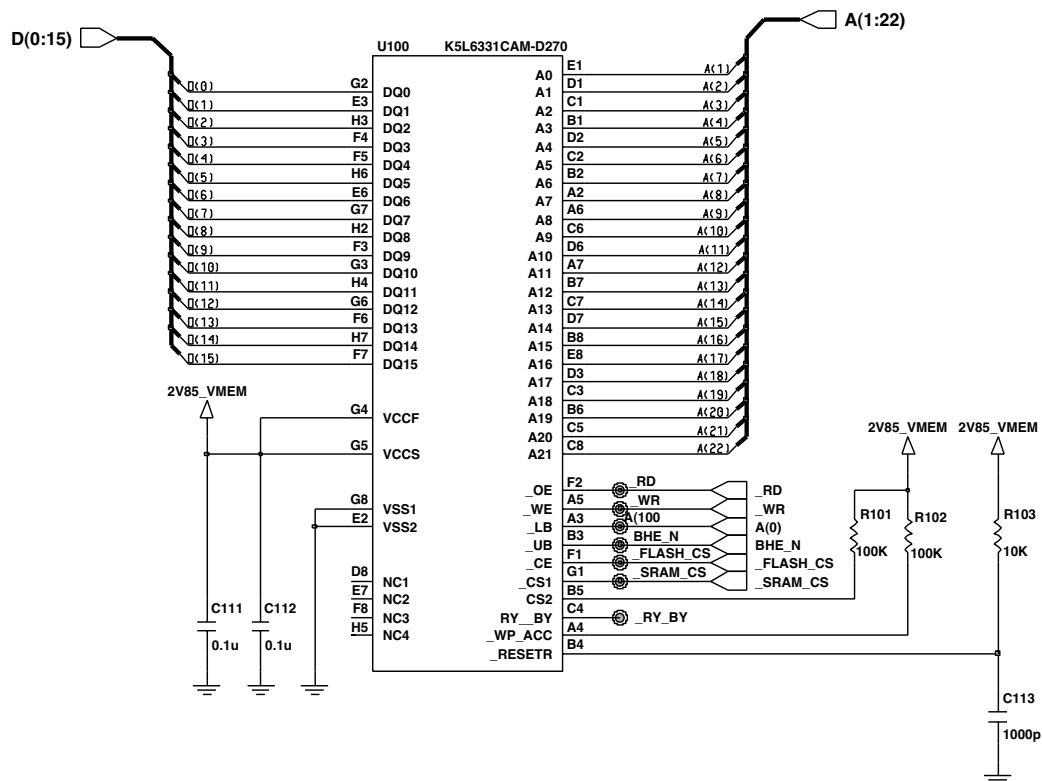
Figure 3-13 Memory interface

In E-Gold voice, the 16bits demultiplex X-bus interface is used for memory device support. NOR Flash memory is supported. (The NAND Flash memory is not supported). The page mode can be supported forflash memories.

Up to 8MBytes of external RAM and/or ROM can be connected to the MCU via its external bus interface. Up to 3 external CS signals can be generated to save external glue logic.

Access to very slow memories is supported via a special 'Ready' function.

The system MCU clock is set to run with 26Mhz.

3.14 Power Block Interface
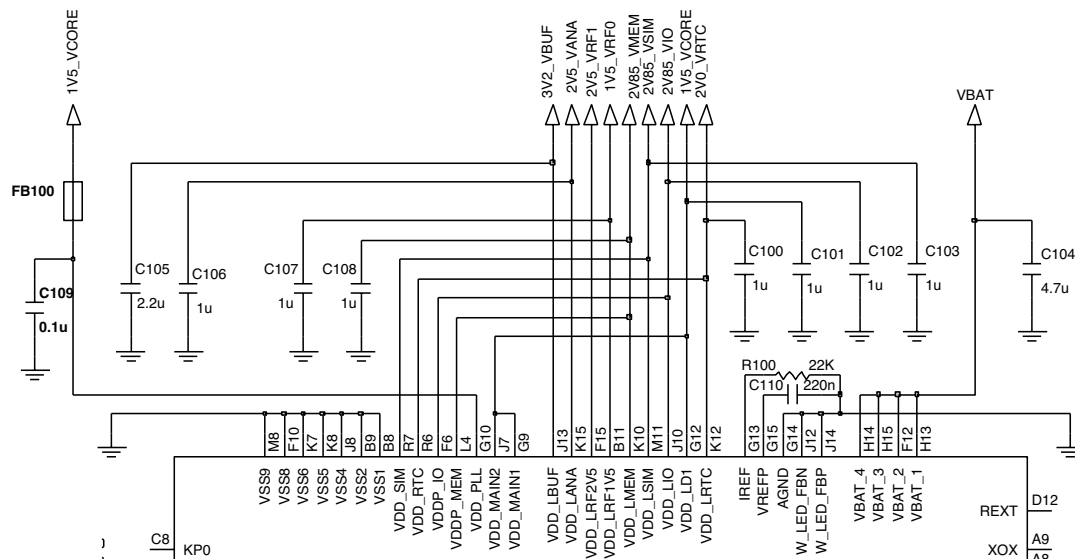
Figure 3-14-1 Power Block interface

The E-Gold voice integrated power management unit (PMU) supports direct connection to battery (DCB). That means all supply voltages needed are generated on-chip with integrated linear voltage regulators. The input of these linear voltage regulators is the battery voltage. The external memory and SIM card supply is provided by the on-chip voltage regulators. Table 144 is an overview of the internal generated supply voltages.

The integrated power management also provides the control state machine for system start up, including start up with discharged batteries, trickle charging and system reset control. After system start up several methods are implemented for active and idle power saving.

Name	Output Voltage(V)	Output Current (mA)	Comment
LRTC	2.0	4	Used for the real time and digital PMU supply
LD1	1.2/1.5	150	Used for the core supplies (MCU and DSP via switch)
LIO	1.8/2.85	30	Used for the I/O pad supply and, for example, the display
LRFXO	2.5	10	Used for the crystal oscillator supply
LMEM	1.8/2.85	100	Used for the external memory supply, voltage can be configured during startup
LANA	2.5	100	Used for analog (audio and baseband processing) and headset driver
LSIM	1.8/2.85	30	Used of the SIM card supply
LBUF	2.6/2.8/3.0/3.2	300	Used for the loudspeaker and earpiece driver
LRFRX	2.5	100	Used for the RF RX part
LRFTRX	1.5	120	Used for the RF TX/TX part

Figure 3-14-2 EGlod Voice PMU

LDO output voltage selection
- LD1, LIO, LSIM, LBUF output voltage programmable by software.
- LMEM output voltage is selectable by pin configuration upon startup.

Active and idle power saving options:
- The flexible clock switching options allow minimizing the power consumption during the operation phases of the E-GOLD voice.
- Current consumption during the standby mode is minimized by reducing the clock to 32 kHz and switching it off for most of the device. In addition, the power supply for the TEAKLite ROM is switched off and the controller RAM is switched to a power saving mode.

Start-up and Reset Control State Machine Features
- Power up upon battery insertion, push button, alarm, charger connection.
- Detection of battery exchange or re-insertion.
- Complete start-up sequence management.
- System turn-on, system turn-off operation management including emergency (under-voltage) and programmed shutdown functions.
- Internal reset of the baseband, including silent reset.
- Tri-state function of the baseband module.
- Standby mode controlled by VCXO_EN provided by SCCU module.

3.15 MG370a, MG370b,KG370,KG375 Function difference

Design	RF Band	GSM900/ DCS1800			GSM850/ PCS1900
	Market	Europe	Asia / CIS	Latin America	Latin America
	Without FM Radio	KG375	-	-	-
	With FM Radio	-	KG370	MG370b	MG370a

< Internal Antenna >

MG370b , KG370, KG375

MG370a

3.16 BOM difference

Part	Block	MG370b, MG370b, KG370	KG375
Baseband	I/O	L200~202 : ELCH0005009 (100nH) L204 : ELCH0010302 (100nH) R294~295 : ECZH0000826 (27pF) R296 : ELCH0005009 (100nH) R297~299 : ECZH0000826 (27pF)	L200~202 : N.A L204: ERHZ0000701 (0Ω) R294: ERHZ0000483 (47Ω) R295~299 : N.A
	FM Radio	C301: ECZH0000813 C302: ECZH0001216 C303: ECZH0001216 C304: ECCH0004904 C305: ECCH0000182 C306: ECCH0004904 C307: ECCH0004904 C308: ECCH0000182 C309: ECCH0000182 C310: ECCH0004904 C311: ECCH0000182 R300: ERHZ0000476 R301: ERHZ0000438 R302: ERHZ0000438 R303: ERHZ0000476 R304: ERHZ0000405 R305: ERHZ0000406 R306: ERHZ0000485 R307: ERHZ0000485 R308: ERHZ0000406 R309: ERHZ0000406 R310 : ERHZ0000454 (27 KΩ) R311,R312 : N.A (0Ω pad, Open) U300: EUSY0320801 U301: EUSY0142501 U302: EUSY0223002 U303: EUSY0300101	C300~311 : N.A R300~309 : N.A R310: ERHY0003601 (2.7KΩ) R311,R312 : N.A (0Ω pad,Short) U300~303 : N.A

Part	Block	MG370b, KG370, KG375	MG370a
RF	Tx , Rx matching	FL400 : SFSB0001401 C418 : ECZH0000822 (1.5pF) L401 : ELCH0004709 (3.3nH) C412 : ECZH0000822 (1.5pF) L404 : ELCH0009104 (6.8nH)	FL400 : SFSB0001301 C418 : ECCH0000901 (2.2pF) L401 : ELCH0004704 (1.5nH) C412 : ECCH0000183 (1.8pF) L404 : ELCH0009110 (5.1nH)
	Antenna matching	C410 : ELCH0004723 (1.8nH) L403 : ECZH0000813 (100pF) L400 : ELCH0001031 (15nH)	C410 : ECZH0000813 (100pF) L403 : ELCH0004726 (1.5nH) L400 : ELCH0004711 (22nH)

4. TROUBLE SHOOTING

4.1 Trouble Test Set-up
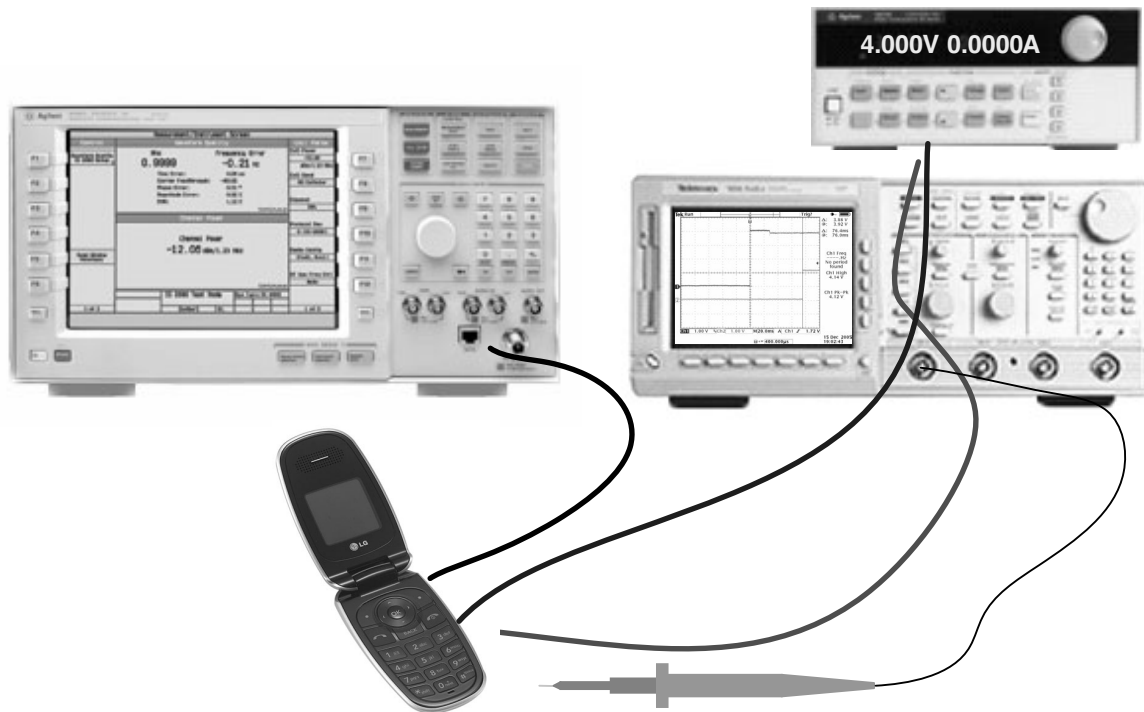
Power on all of test equipment
- Connect PIF-UNION JIG or dummy battery to the DUT for power up.
- Connect mobile switch cable between Communication test set and DUT when you need to make a
  phone call.
- Follow trouble shooting procedure

4.2 Power On Trouble

TEST POINT

Check Points
-Battery Voltage(Need to over 3.35V)
-Power-On Key detection (PWRON signal)
-Outputs of LDOs from EGV

CIRCUIT

4. TROUBLE SHOOTING

CHECKING FLOW

```
                         ┌──────────────┐
                         │    START     │
                         └──────┬───────┘
                                │
                                ▼
                         ╱────────────╲              NO    ┌────────────────────────────┐
                        ╱ Check Battery ╲──────────────────▶│  Charge or Change Battery  │
                        ╲   Voltage      ╱                  └────────────────────────────┘
                         ╲  > 3.35V     ╱
                          ╲────┬───────╱
                               │ YES
                               ▼
                         ╱────────────────╲           NO   ┌────────────────────────────┐
                        ╱  Push power-on    ╲──────────────▶│  Check the contact of      │
                       ╱  key And check the  ╲             │  power key Or dome-switch   │
                       ╲  level change of     ╱            └────────────────────────────┘
                        ╲  PWRKEY            ╱
                         ╲────┬────────────╱
                              │ YES
                              ▼
                        ╱──────────────────╲                ┌────────────────────────────┐
                       ╱  Check the voltage  ╲──────────────▶│        Replace U103         │
                       ╲  of The LDO outputs  ╱             └────────────────────────────┘
                        ╲  at U103           ╱
                         ╲────┬─────────────╱
                              │ YES
                              ▼
                        ╱────────────────────╲        NO    ┌────────────────────────────┐
                       ╱  Check the clock      ╲────────────▶│        Replace U103         │
                       ╲  signal on X100        ╱           └────────────────────────────┘
                        ╲  32.768KHz/0.5V      ╱
                         ╲────┬───────────────╱
                              │ YES
                              ▼
                         ┌──────────────┐
                         │ THE PHONE WILL│
                         │  POWER ON.    │
                         └──────────────┘
```
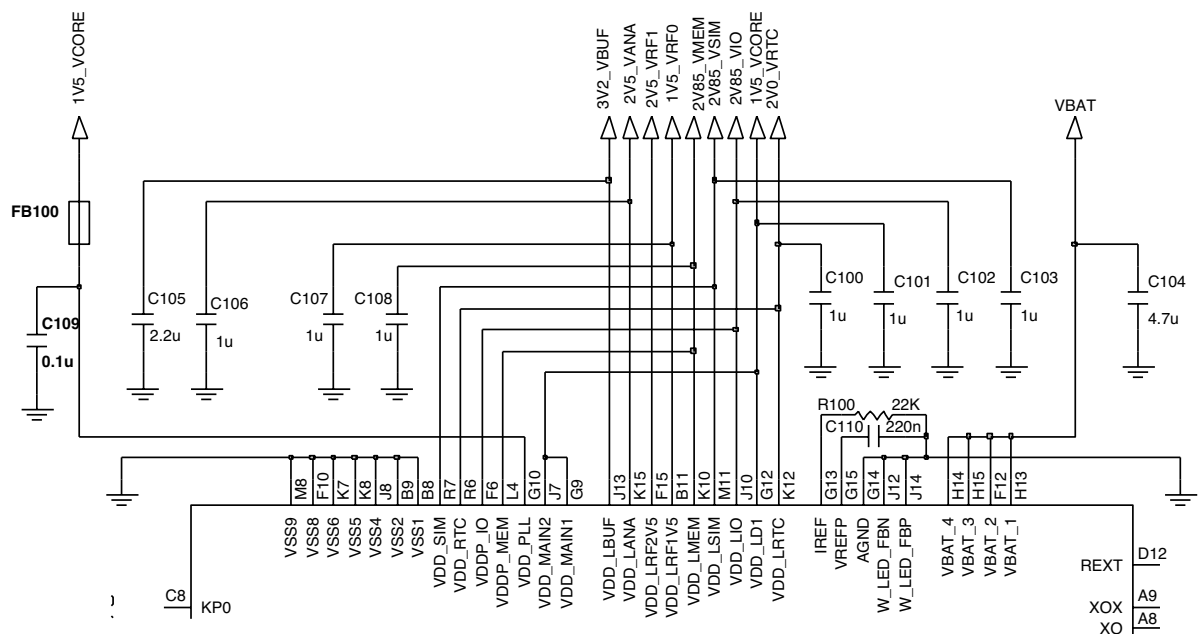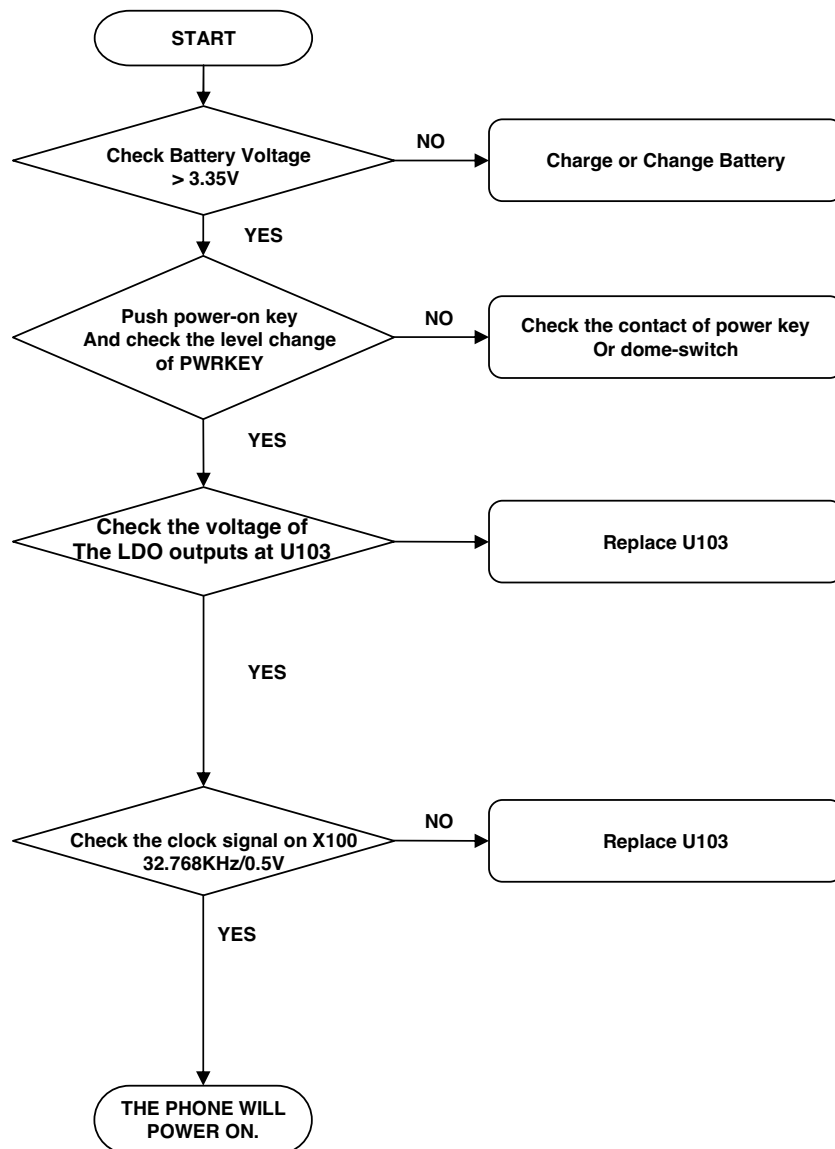
4.3 Charging Trouble

Check Points
- Connection of TA (check TA voltage 5.1V)
- Charging Current Path component voltage drop
- Battery voltage
- Charging IC

CIRCUIT

4. TROUBLE SHOOTING

Checking Flow

```
                        ( START )
                            |
                            v
        I/O Connector(CN201)        NO      Resolder the CN201
        Is well-soldered ?    ----------->  Pin 12,13 : VCHARGE
                            |
                          YES
                            |
                            v
        Voltage at anode of         NO      The TA is out of order
        C233 = 5.1V ?         ----------->  Change the TA
                            |
                          YES
                            |
                            v
        The Voltage of R222         NO      Replace the
        Is 0V                 ----------->  U201
                            |
                          YES
                            |
                            v
                                    NO      The battery may have
        Battery is charged?   ----------->  problems.
                            |               Change the battery.
                          YES
                            |
                            v
                    ( Charging is
                    properly operating )
```
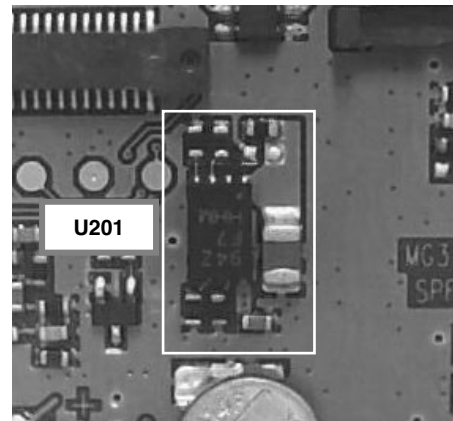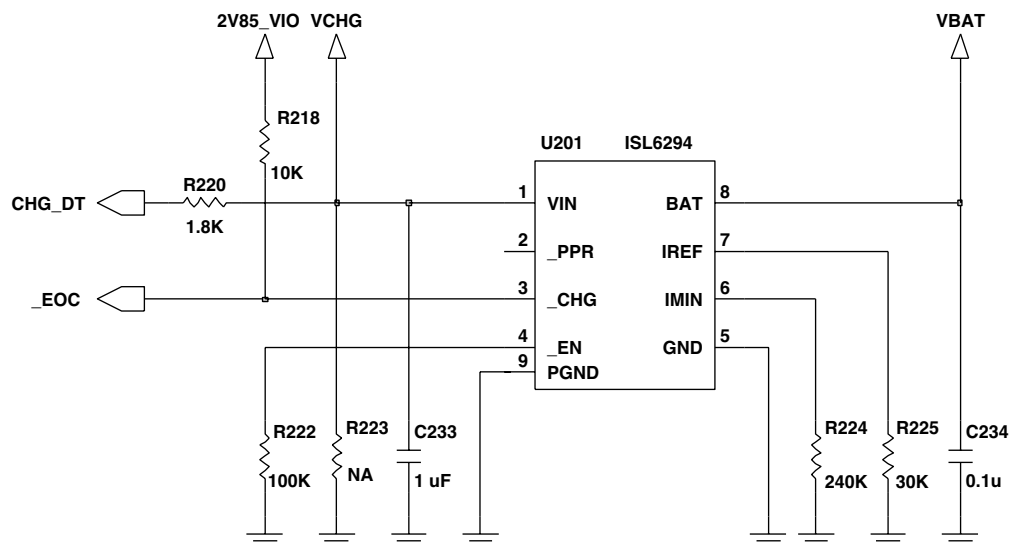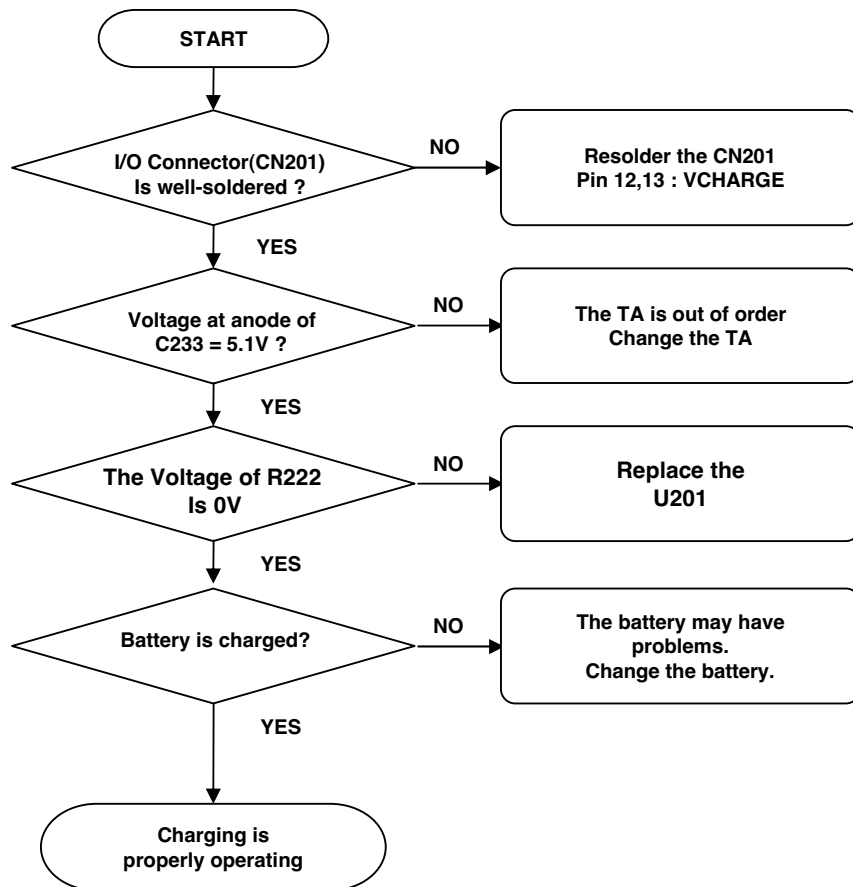
4.4 Vibrator Trouble

TEST POINT

Check Points
-Vibrator contact is right
-Tr is working correctly

CIRCUIT

4. TROUBLE SHOOTING

<div style="background:#ccc">

CHECKING FLOW

</div>

<div style="background:#ccc">

SETTING : Enter the engineering mode, and set vibrator on at vibration of BB test menu

</div>

```
                    ┌──────────────┐
                    │    START     │
                    └──────┬───────┘
                           │
                           ▼
              ◇ Is the voltage at pin 2 ◇──NO──▶ ┌──────────────────┐
                of Q200 high ?                   │  Resolder Q200   │
                           │                     └──────────────────┘
                          YES
                           │
                           ▼
              ◇ Is the voltage at pin 4 ◇──NO──▶ ┌──────────────────────┐
                of Q200 = VBAT ?                 │ Check the battery    │
                           │                     │ voltage level        │
                          YES                    └──────────────────────┘
                           │
                           ▼
              ◇  Check the contact   ◇──NO──▶ ┌──────────────────────┐
                 of CN200 ?                   │ Check contact problem│
                           │                  │ and clean the contact│
                          YES                 └──────────────────────┘
                           │
                           ▼
              ◇ Check the connection ◇──NO──▶ ┌──────────────────┐
                vibrator ?                    │ Reconnect vibrator│
                           │                  └──────────────────┘
                          YES
                           │
                  ┌──────────────────┐
                  │ Replace vibrator │
                  └────────┬─────────┘
                          YES
                           │
                  ┌──────────────────┐
                  │    Vibrator      │
                  │  Working well !  │
                  └──────────────────┘
```
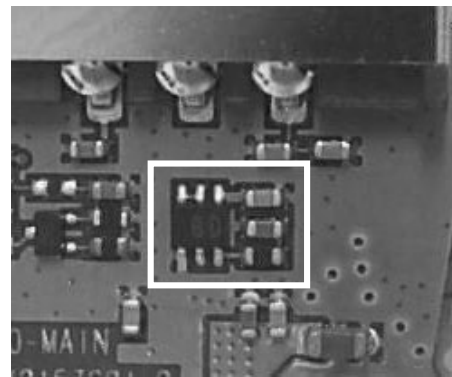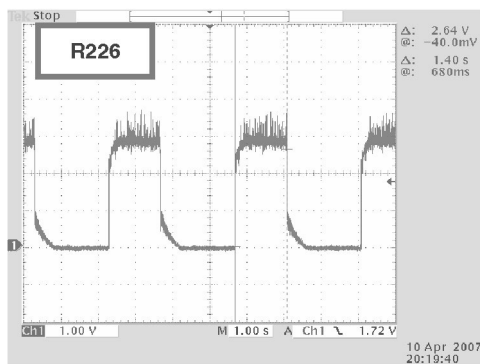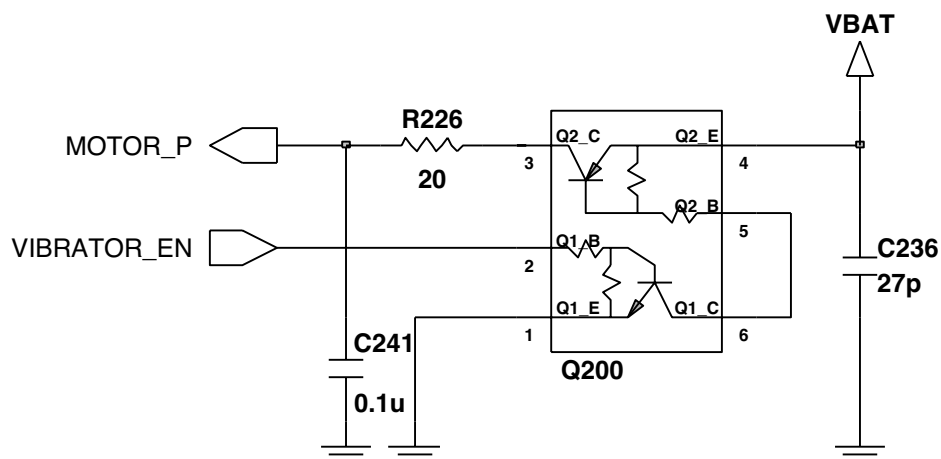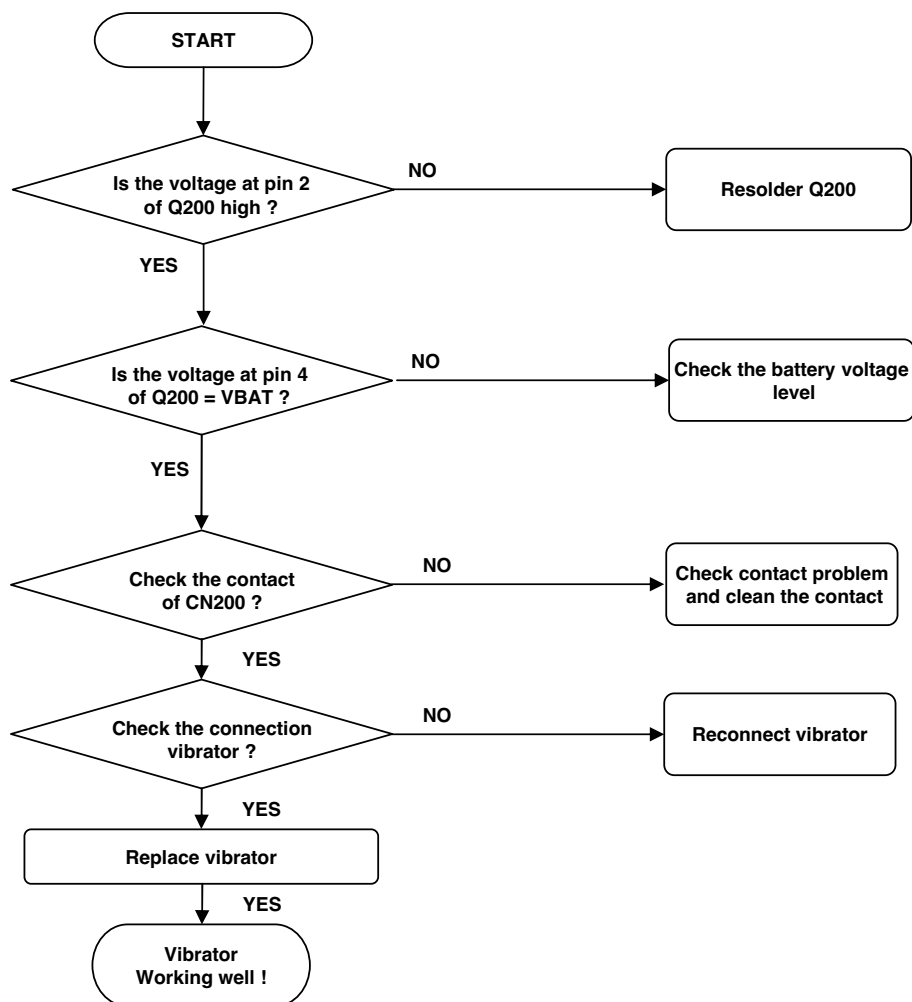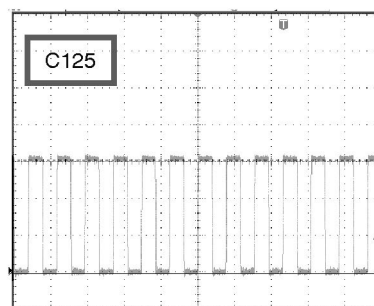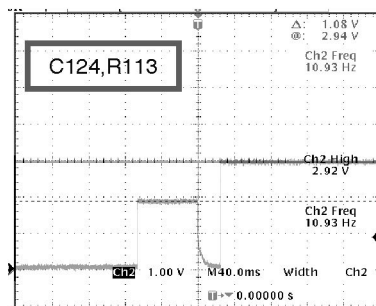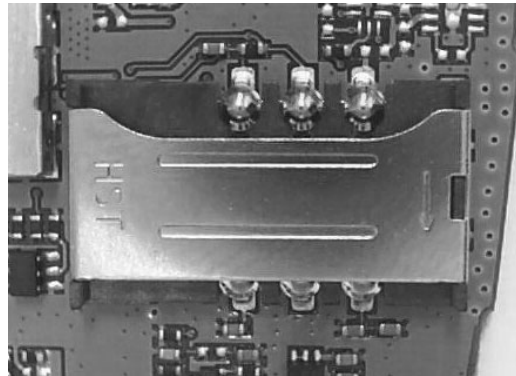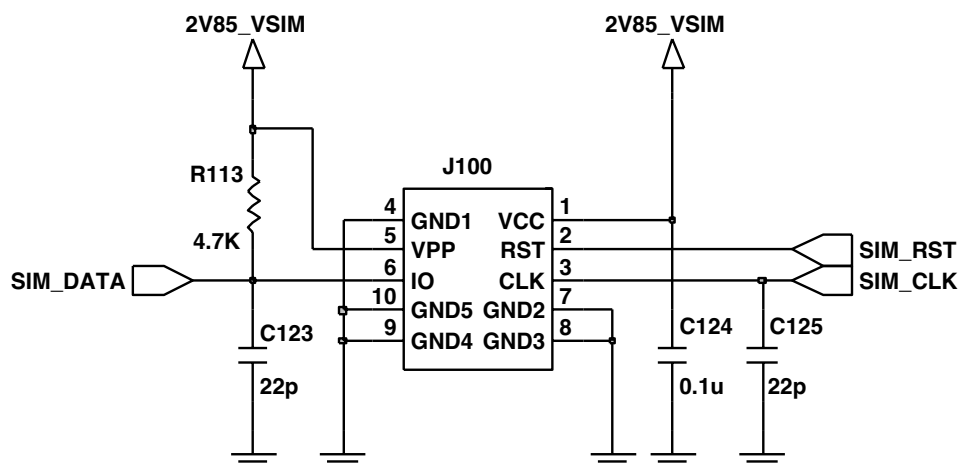
4.5 SIM Card Trouble

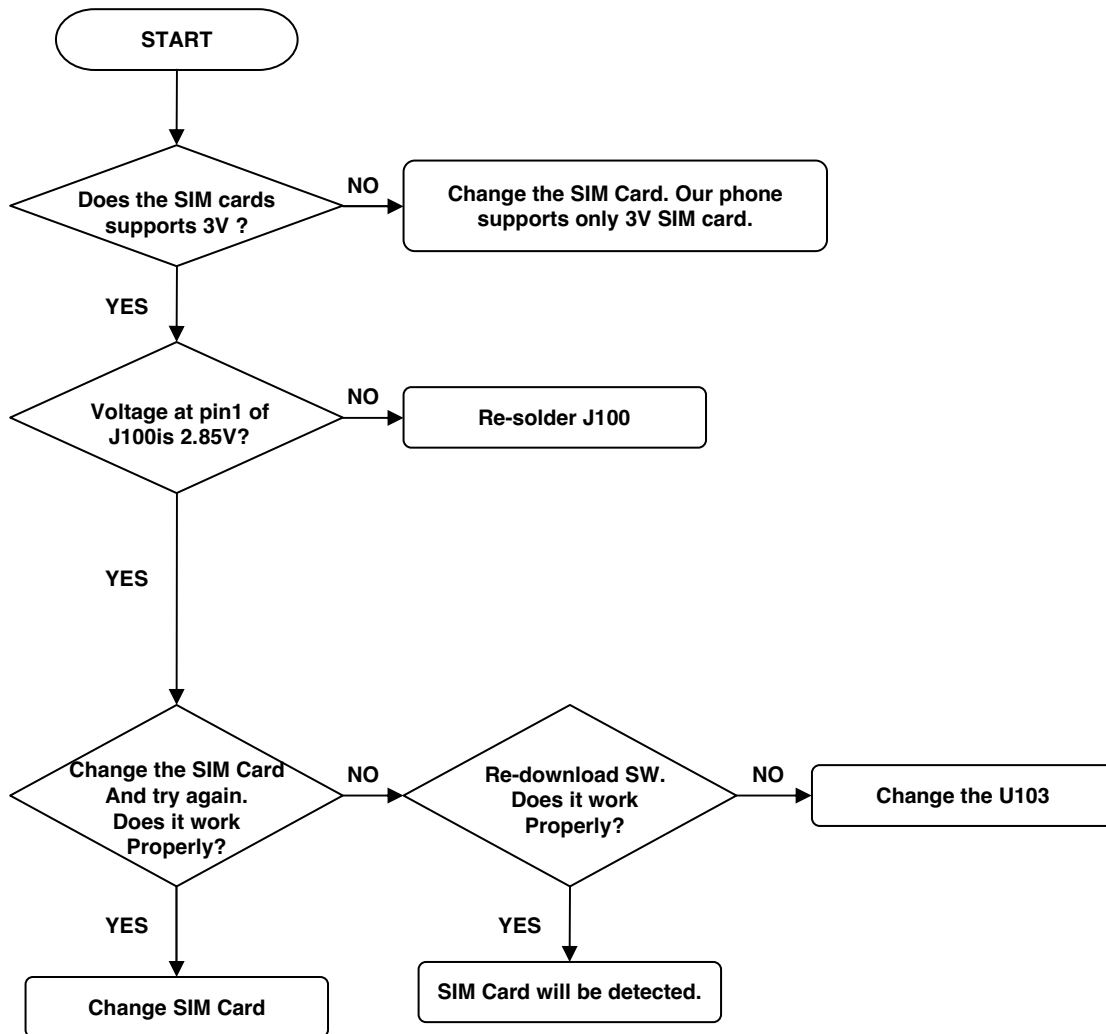**TEST POINT**

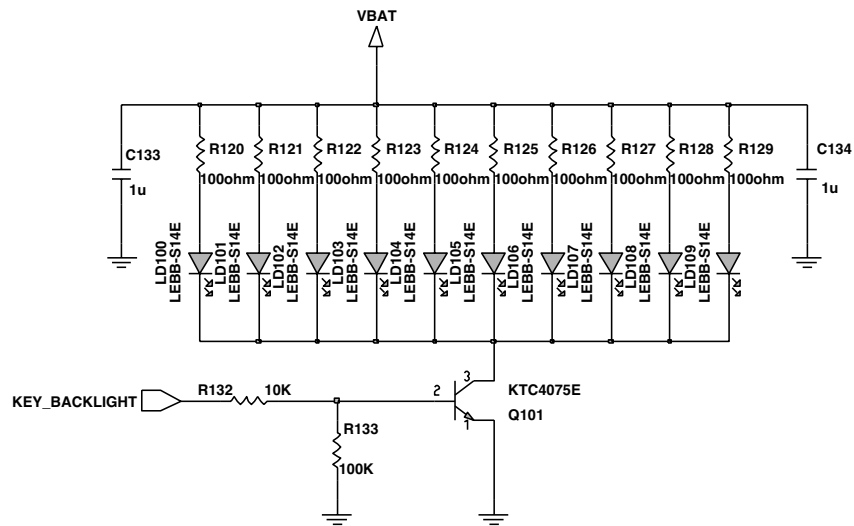Check Points
-Socket soldering
-Proper SIM is used
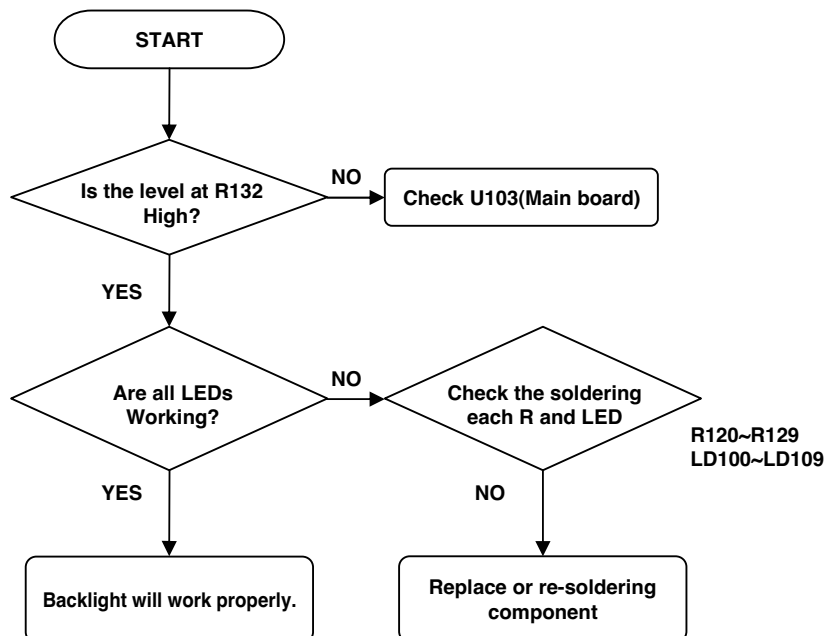

CIRCUIT

4. TROUBLE SHOOTING

Checking Flow

```
                    ( START )
                        |
                        v
            +-----------------------+        Change the SIM Card. Our phone
            | Does the SIM cards    |  NO -> supports only 3V SIM card.
            | supports 3V ?         |
            +-----------------------+
                      | YES
                      v
            +-----------------------+  NO -> Re-solder J100
            | Voltage at pin1 of    |
            | J100is 2.85V?         |
            +-----------------------+
                      | YES
                      v
            +-----------------------+       +-----------------------+
            | Change the SIM Card   |       | Re-download SW.       |
            | And try again.        | NO -> | Does it work          | NO -> Change the U103
            | Does it work          |       | Properly?             |
            | Properly?             |       +-----------------------+
            +-----------------------+                  | YES
                      | YES                            v
                      v                        SIM Card will be detected.
               Change SIM Card
```

4.6 KEY backlight Trouble

4.7 RTC Trouble

CIRCUIT

RESET_N P5 ⌾ _RESET
SAFE_RES M7
N7 PWRON
OSC32K P6
F32K R5
CLKOUT B4 HS_FM_SEL

32.768KHz
1   2
4   3
X101   MC-146_12_5PF

T_OUT8 B7 BAND_SEL
T_OUT4 A5 32K_OUT
T_OUT3 A6 VC2
T_OUT2 B6 VC1
T_OUT0 A7 TXON_PA

C121 C122
18p   18p

OE_N N5 _RD
ADV_N M6 FM_RADIO_EN

CHECKING FLOW

START

Is the frequency about 32Khz
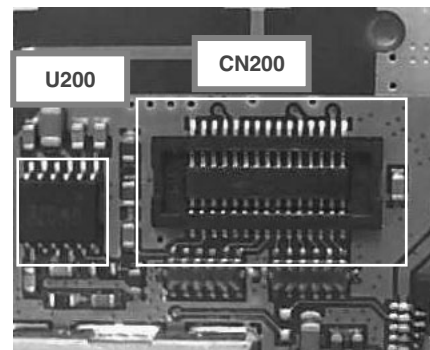
YES

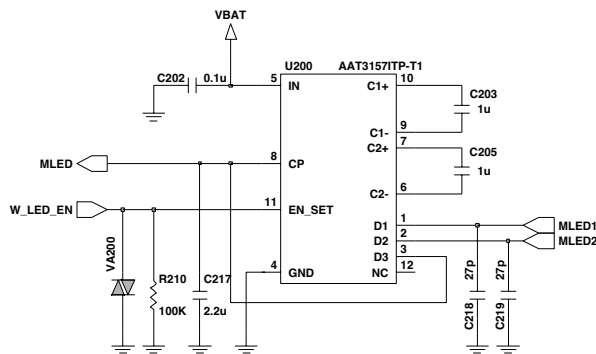Replace X101 and try again.
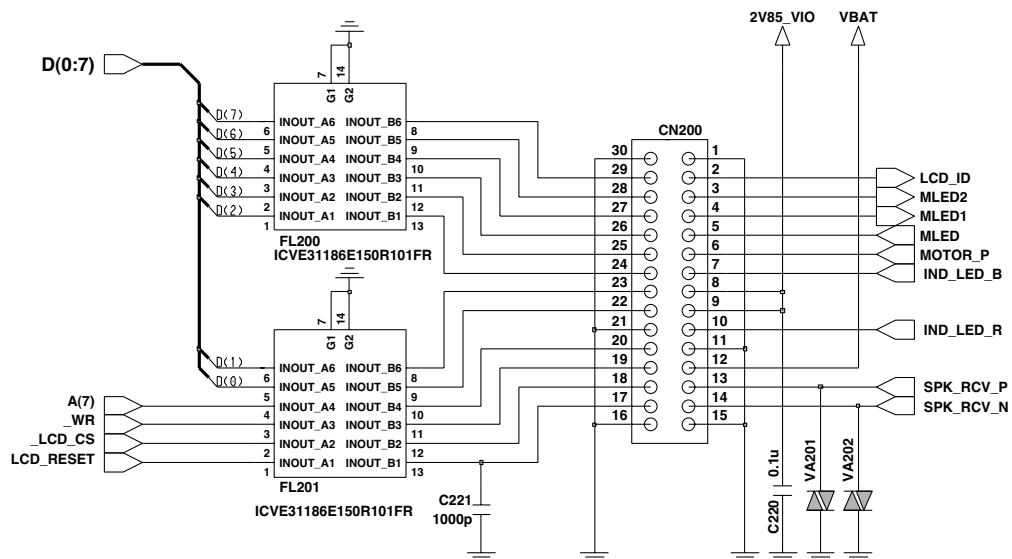
YES

RTC will work properly
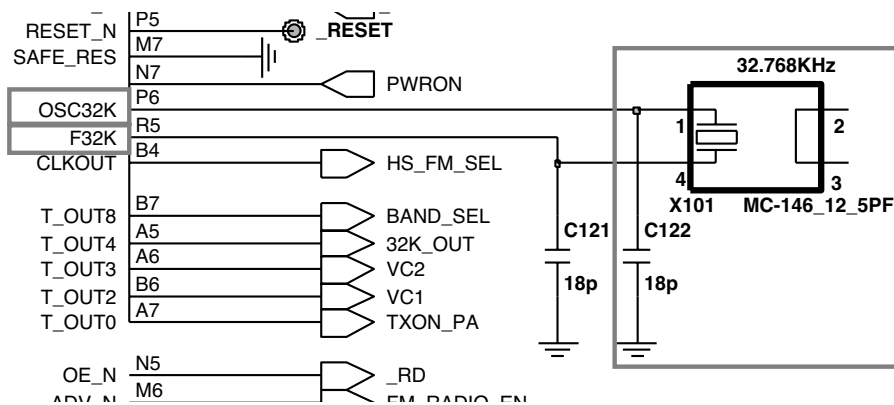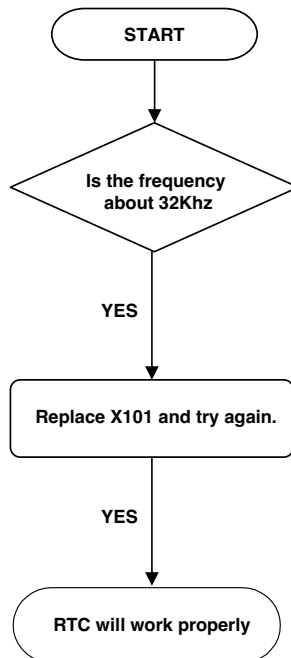
4.8 LCD Trouble

TEST POINT

-LCD assembly status (FPCB)
-SPI Interface's status
-Connector combination

CIRCUIT

4. TROUBLE SHOOTING
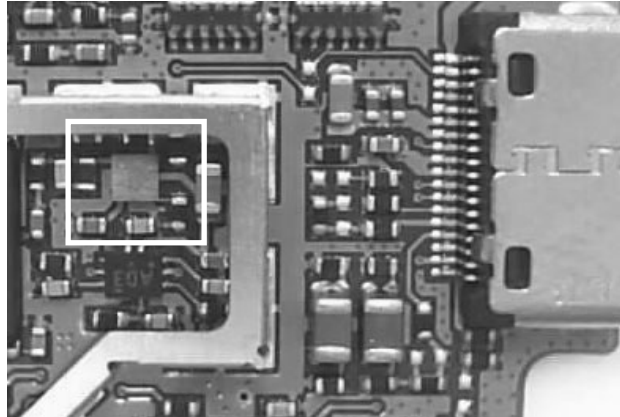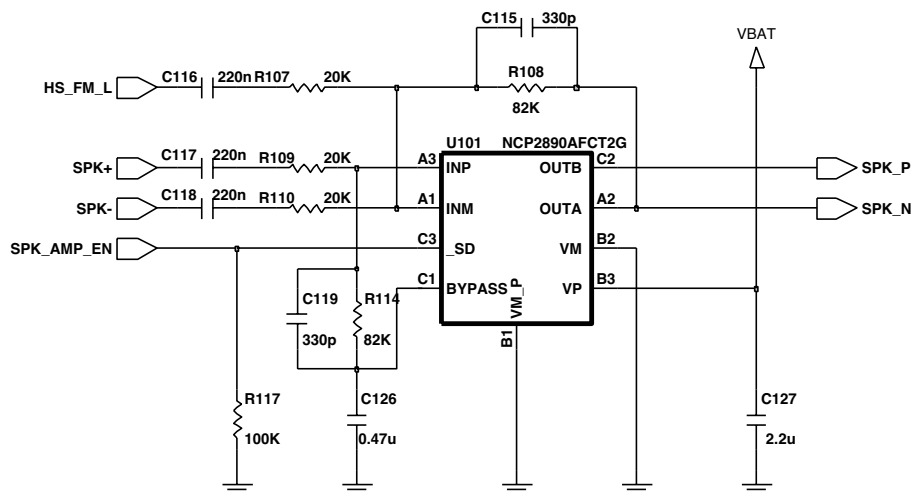
CHECKING FLOW

```
                          ┌──────────┐
                          │  START   │
                          └────┬─────┘
                               │
                               ▼
                    ◇ Is the connection of ◇   NO    ┌─────────────────────────────────┐
                    ◇ FPCB with connector on ◇──────▶│ Reassemble FPCB with CN200connector │
                    ◇ PCB(CN200) ok ?        ◇        └─────────────────────────────────┘
                               │ YES
                               ▼
                    ◇ Check the soldering of ◇  NO    ┌─────────────────────┐
                    ◇ CN200 ?                ◇──────▶│  Re-soldering CN200 │
                               │ YES                 └─────────────────────┘
                               ▼
                    ◇ Check the voltage      ◇  NO    ┌─────────────────────┐
                    ◇ Of 2V85_VIO ?          ◇──────▶│   Check the U103    │
                               │ YES                 └─────────────────────┘
                               ▼
                    ◇ Check the signals of   ◇  NO    ┌─────────────────────┐
                    ◇ LCD data & command     ◇──────▶│ Check the FL200, FL201│
                               │ YES                 └─────────────────────┘
                               ▼
                    ◇ Does LCD work          ◇  NO    ┌─────────────────────┐
                    ◇ properly ?             ◇──────▶│  Replace LCD module │
                               │ YES                 └─────────────────────┘
                               ▼
                        ┌──────────────┐
                        │ LCD working well ! │
                        └──────────────┘
```
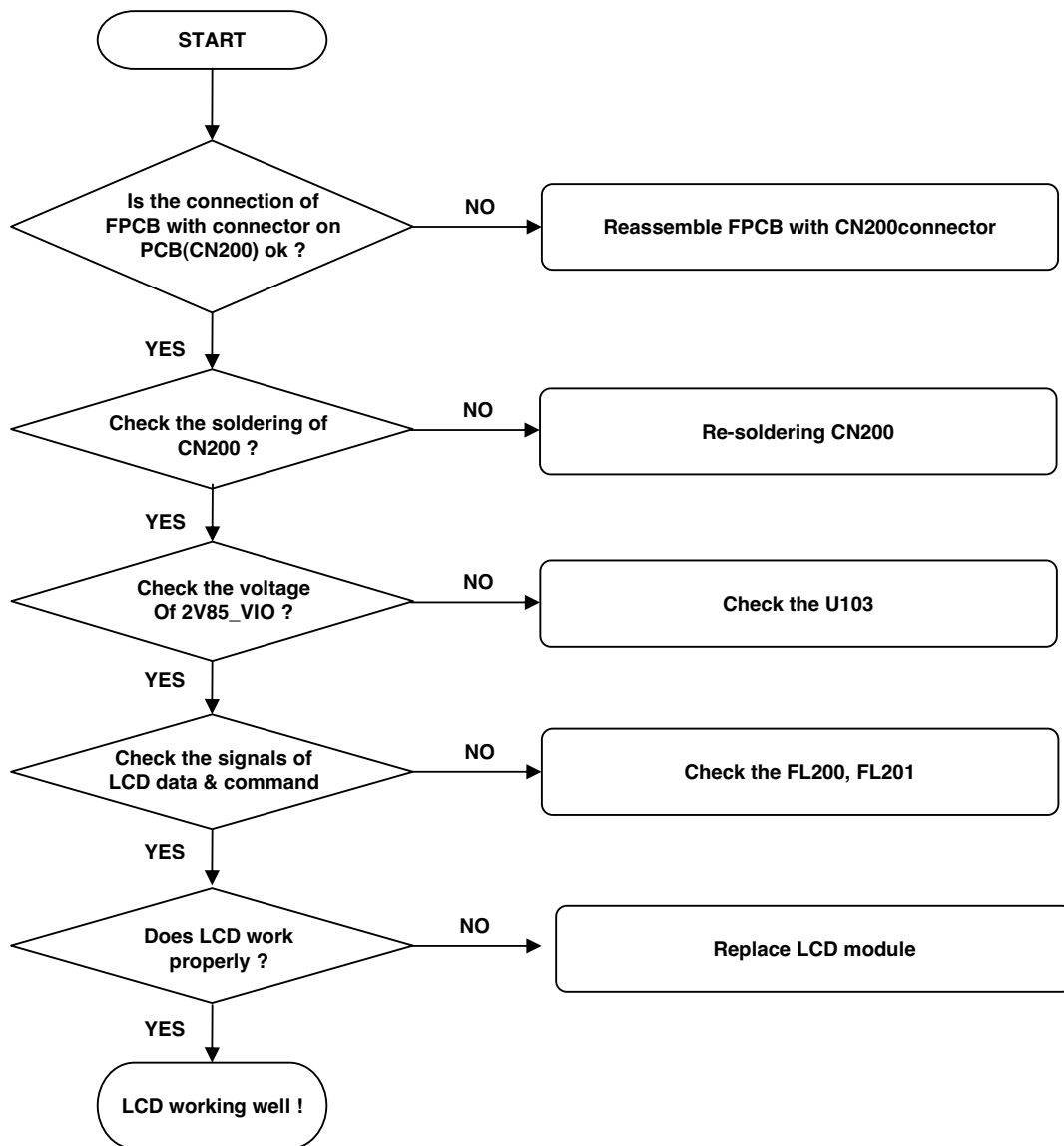
4.9 Speaker Trouble

Check Points
-Speaker spring contact
-Audio amp soldering

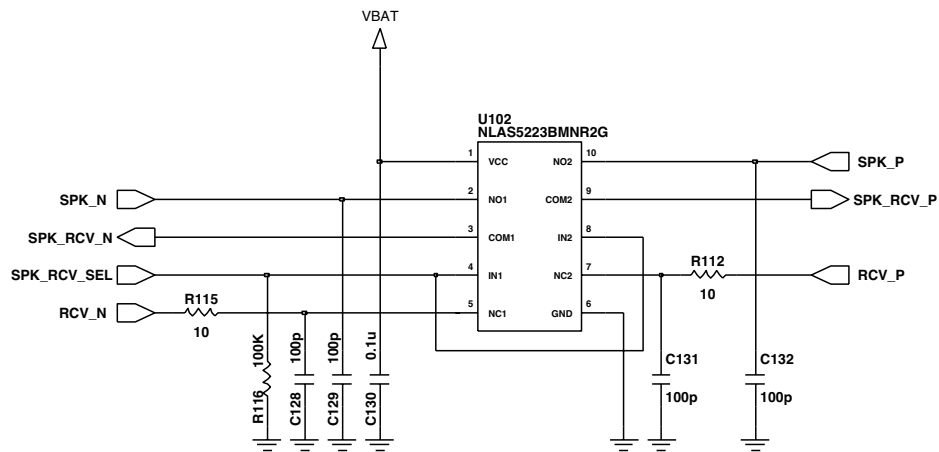
CIRCUIT
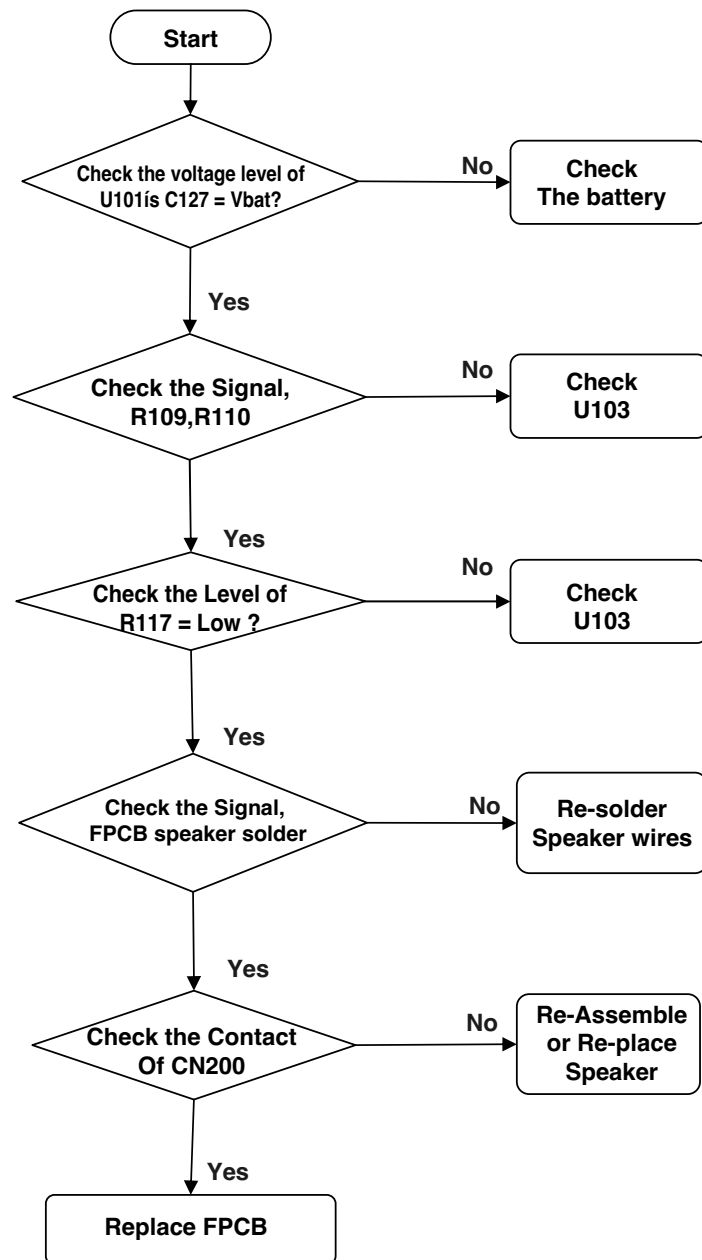
Checking Flow

4.10 Receiver Trouble

CIRCUIT

CHECKING FLOW
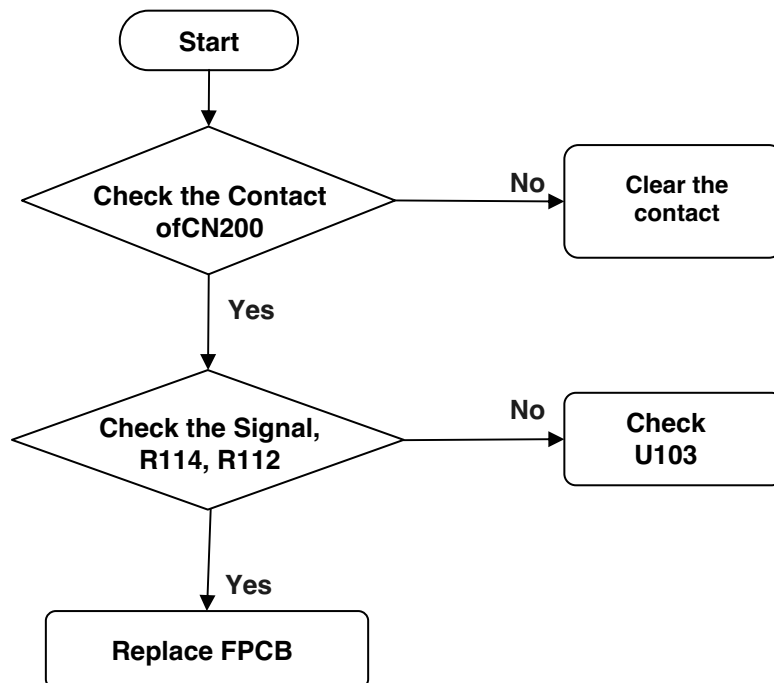
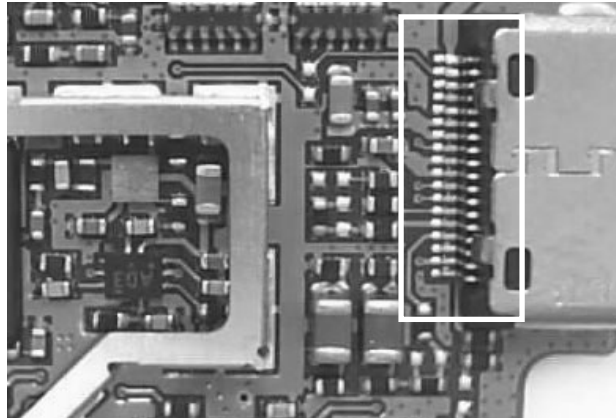## 4.11 Headphone Trouble

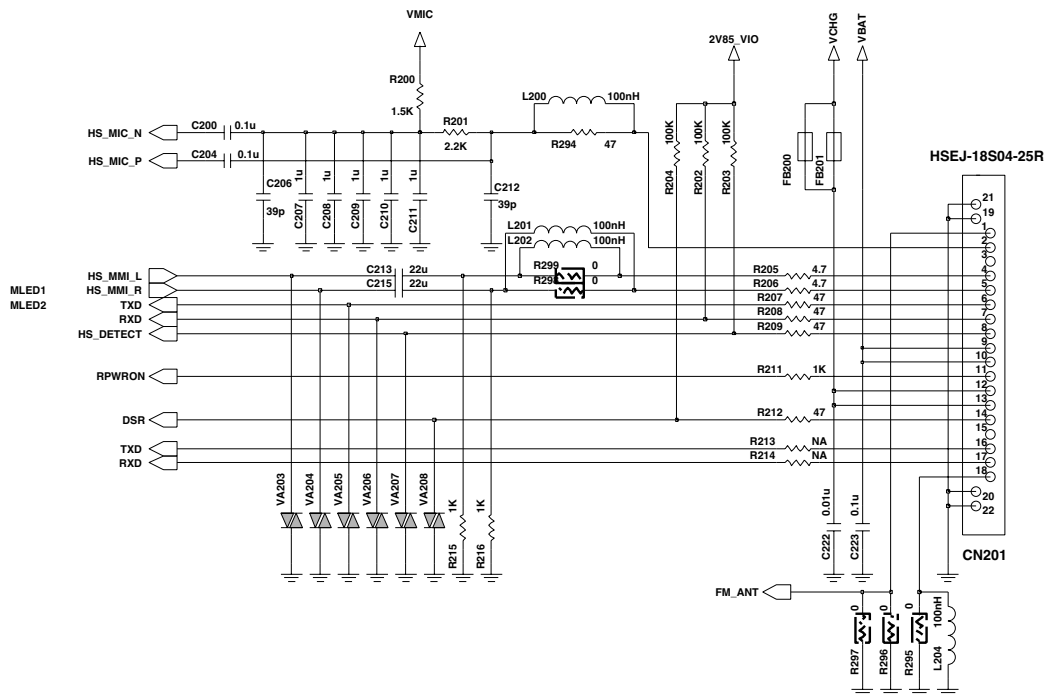**TEST POINT**

Check Points
-18pin IO connector
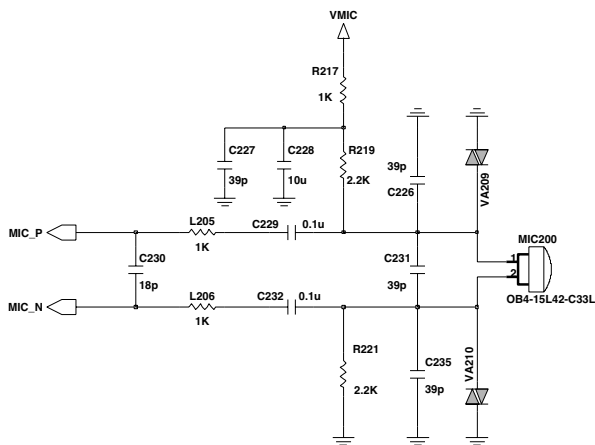-Passive Parts soldering Status
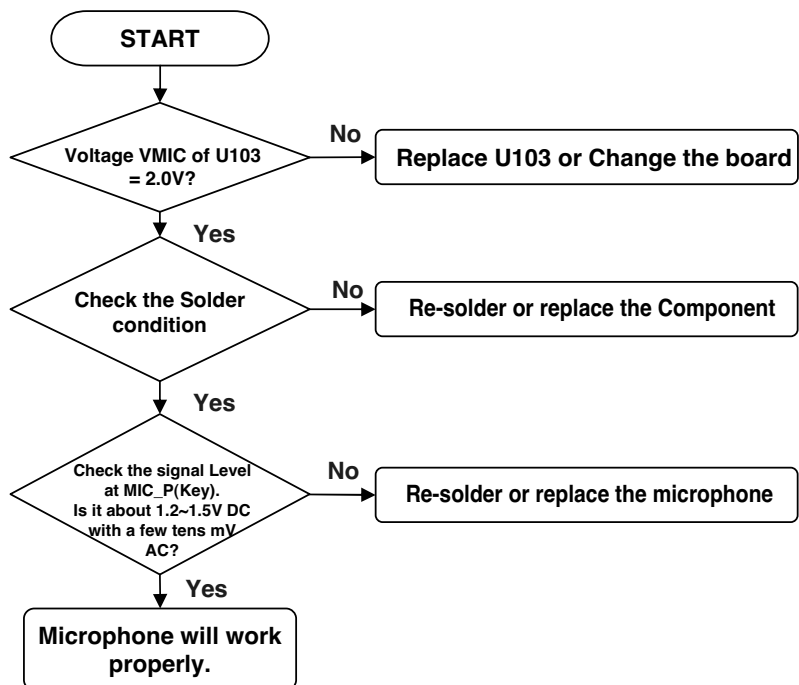

CIRCUIT

CHECKING FLOW
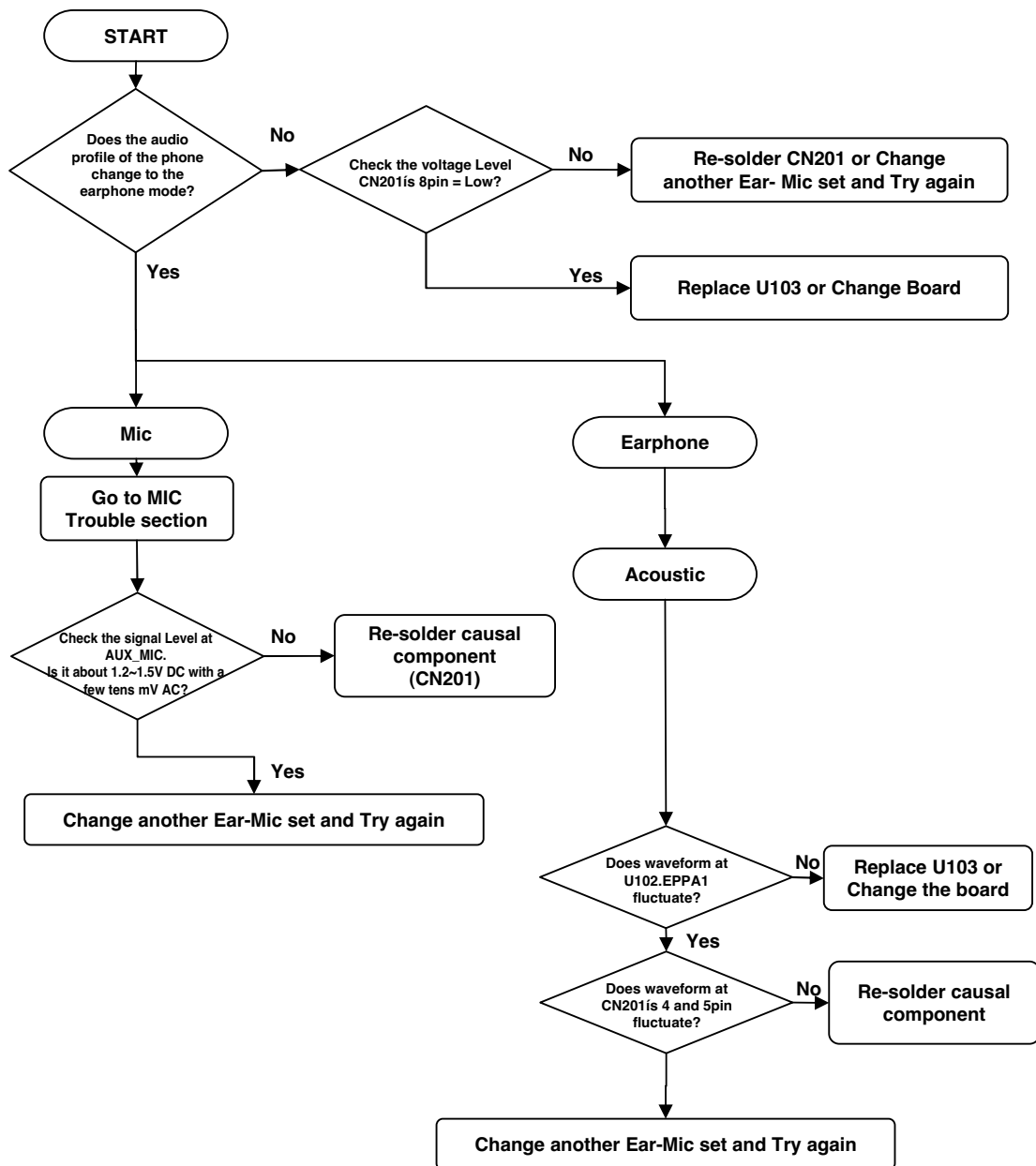
4.12 Microphone Trouble

CIRCUIT
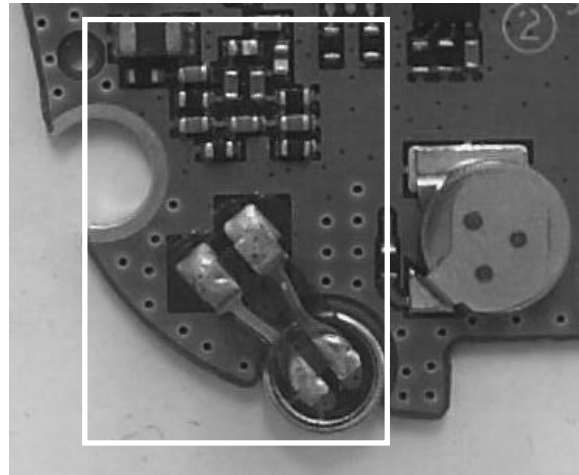
CHECKING FLOW

4.13 RF Components

RF Components Placement

<ASM interface>

MODE	VC1	VC2
850/900 TX	H	L
1800/1900 TX	L	H
850/900/1800/1900 RX	L	L

<SAW Filter interface>
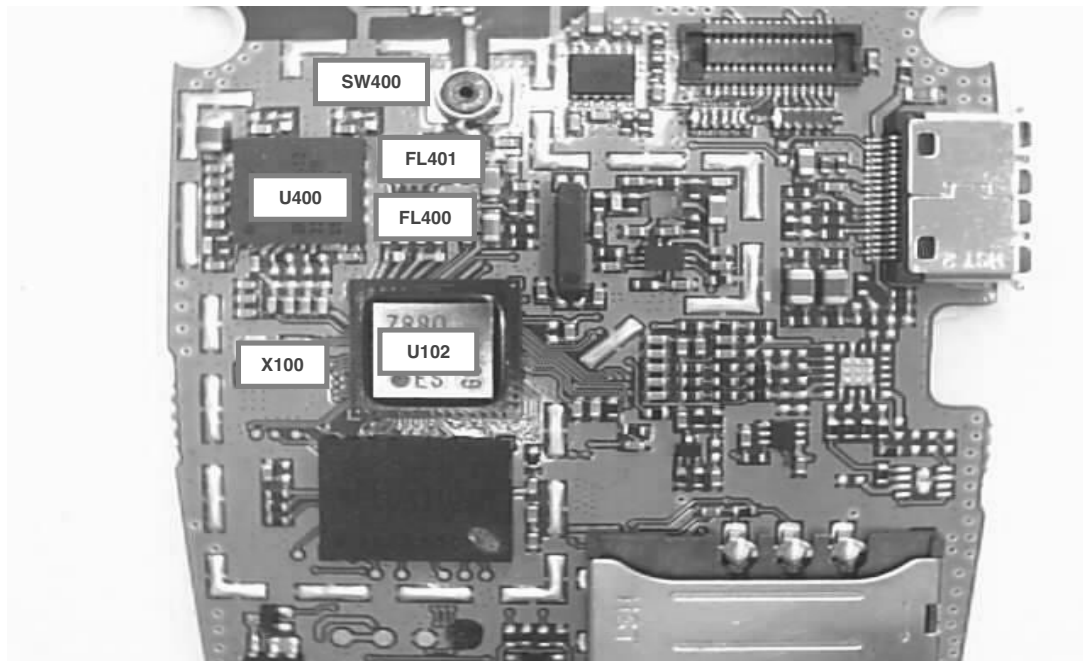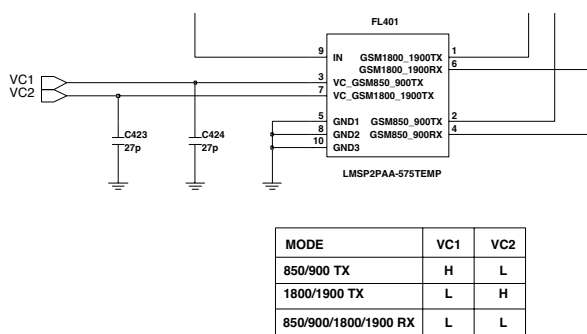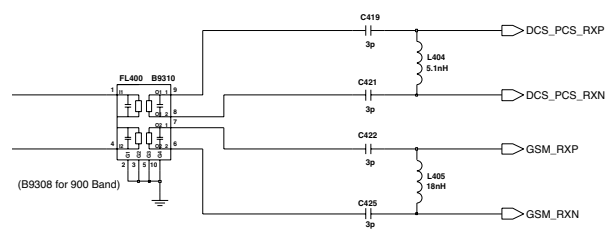
REFERENCE	PART Description
U400	PAM (Power Amp. Module)
X100	DCXO (26MHz)
FL401	ASM (Antenna Switch Module)
SW400	Mobile Switch
FL400	RX SAW Filter

- 64 -

4.14 RX Receiver Part

CHECKING FLOW

RX Receiver Part

```
┌──────────────────┐
│      START       │
└──────────────────┘
         │
         ▼
┌──────────────────┐
│ Setup Test Equipment │
│ Cell Power : -74d Bm │
│   GSM850  CH190    │
│     PCS CH660      │
└──────────────────┘
         │
         ▼
      ╱────────╲
     ╱  Check    ╲
    ╱  point.     ╲
    ╲ DCXO(X100)  ╱
     ╲           ╱
      ╲─────────╱
         │
         ▼
      ╱────────╲
     ╱ Check point╲
    ╱ mobile SW &  ╲
   ╱  ASM & SAW     ╲
   ╲ Filter(SW400,F ╱
    ╲ L400,FL401)  ╱
     ╲           ╱
      ╲─────────╱
         │
         ▼
┌──────────────────┐
│ Re-Download  S/W & │
│       CAL        │
└──────────────────┘
```
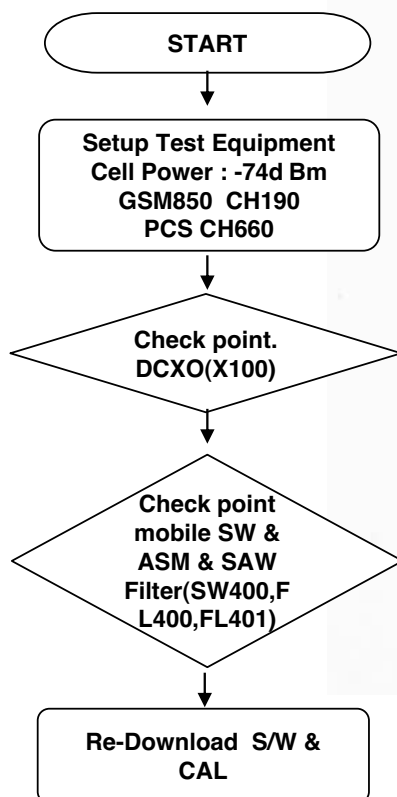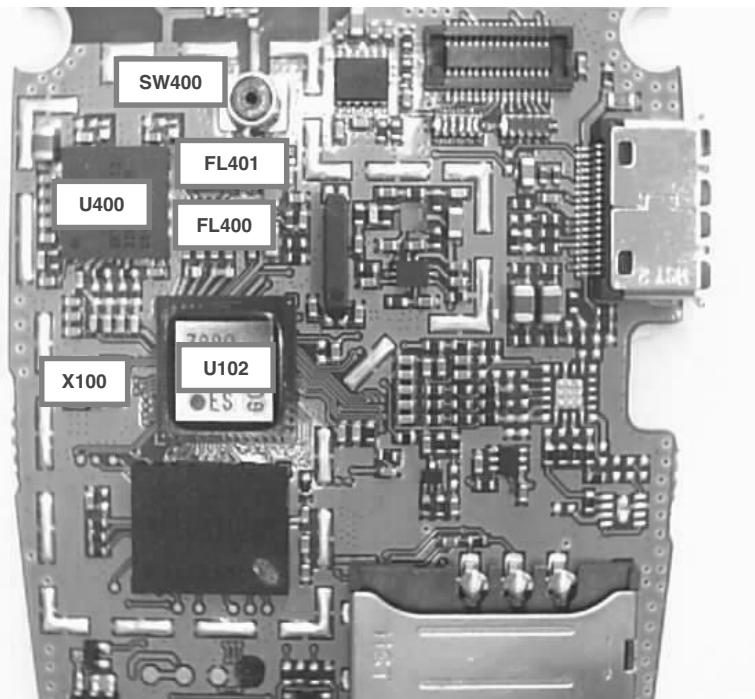
DCXO **CHECKING FLOW**

Checking Points

X100

Pin 1: 26MHz

Is the waveform of Pin3 similar to DCXO(X100) Waveform?

No → Replace X101

Yes ↓

DCXO Circuit is OK. See next page to check PLL Circuit.

REXT D12

XOX A9

XO A8

TX2 A13

TX1 A14

X100 NX3225SA

4 GND2 HOT2 3
1 HOT1 GND1 2

26MHz

DCS_PCS_OUT

GSM_OUT

< DCXO Circuit>

Tek Run: 2.00GS/s   Sample

Waveform

Pin 2

Pin 1

Δ: 1.36 V
@: 1.98 V

C1 High
2.68 V
Unstable
histogram

C2 High
1.20 V

C2 Freq
26.3167MHz
Low signal
amplitude

Ch1 1.00 V Ch2 1.00 V M 25.0ns Ch1 ƒ 600mV

22 Jul 2006
11:21:49

<DCXO Waveform>
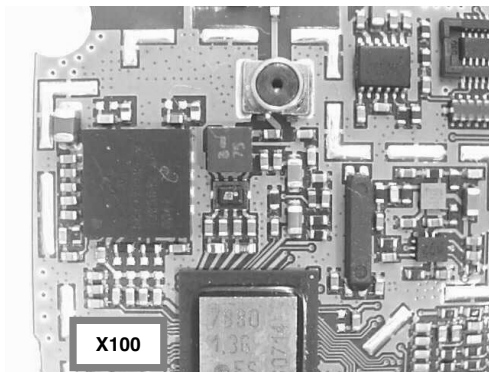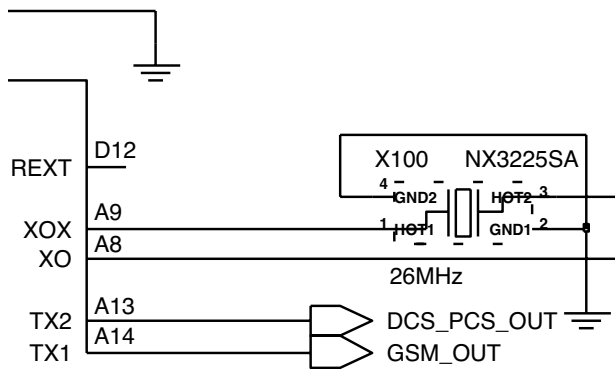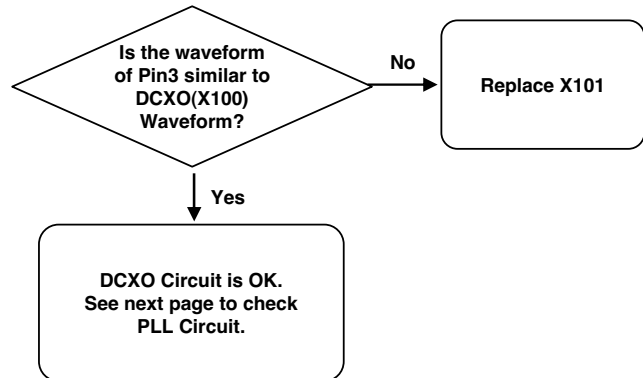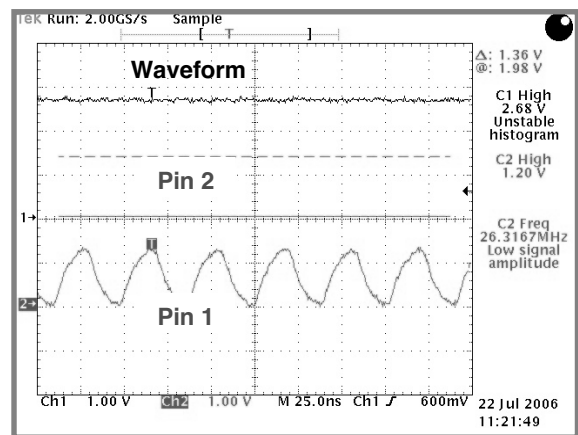
4.14 RX Receiver Part

Mobile S/W & ASM & SAW Filter

CHECKING FLOW

Check Pin 1, 2 of SW400 with RF Cable

Signal is OK ? — No → Replace Mobile SW (SW400)

Yes

Check Pin 4,6 of FL401 ? — No → Replace ASM (FL401)

Yes

Check Pin 6,7 and 8,9 of FL400 ? — No → Replace SAW Filter (FL400)

Yes

Mobile SW & ASM is OK. See next page

SW400

FL401

Pin 4   FL400   Pin 6

Agilent 17:26:14 Jul 25. 2006
Mkr1 941.068 MHz
Ref −35 dBm   Atten 5 dB   −56.49 dBm
Marker
941.068000 MHz
−56.49 dBm
Center 941 MHz   Span 1 MHz
Res BW 10 kHz   VBW 10 kHz   Sweep 12.88 ms (401 pts)
A:\SCREN231.GIF file saved

Marker
Select Marker 1 2 3 4
Normal
Delta
Delta Pair (Tracking Ref) Ref Delta
Span Pair Span Center
Off
More 1 of 2

* FL400 6,7 and 8,9 output are balanced

4.15 TX Transmitter Part

TX Transmitter Part

CHECKING FLOW


```
┌─────────────────────────┐
│   Setup Test Equipment   │
│  Cell Power : - 74dBm    │
│     GSM850  CH190        │
│       PCS CH661          │
└─────────────────────────┘
            │
            ▼
        Check point
        DCXO(X100)
            │
            ▼
        Check point
      ULC2(U102)Outp
        ut Signal
            │
            ▼
        Check point
        PAM(U400)
       Control Signal
            │
            ▼
          Check
        ASM & Mobile
        S/W & SAW
      (FL401,SW400
        ,FL400)
            │
            ▼
┌─────────────────────────┐
│  Re-Download S/W & RF    │
│           CAL            │
└─────────────────────────┘
```
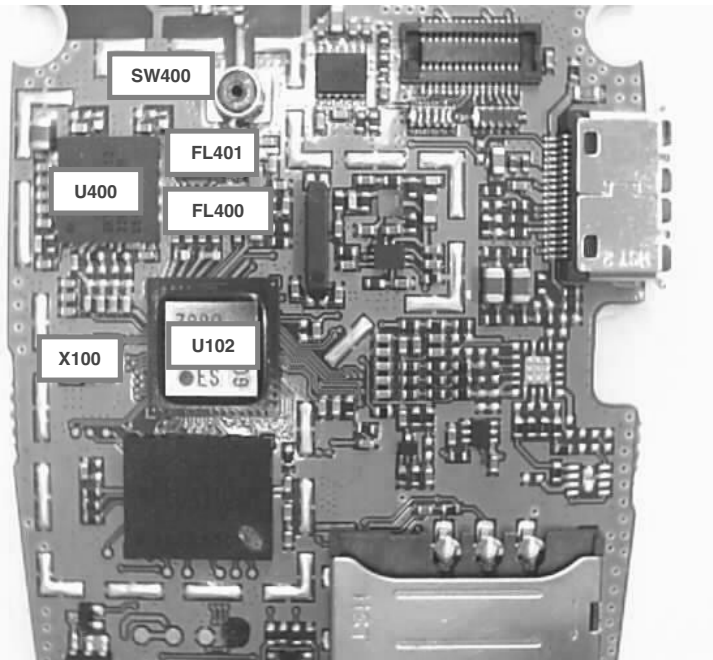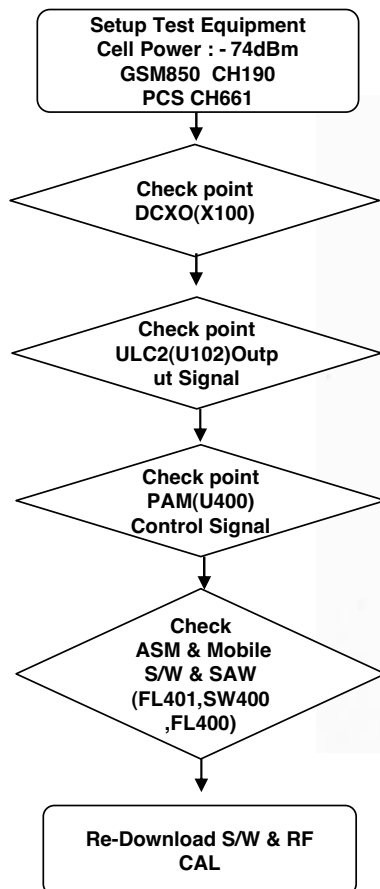
ULC2 RF Output Signals

U400

LB RF Input

HB RF Input

CHECKING FLOW

Paon & BS   ASM   Vapc

Check Control
Signals

Signals are
Normal ?

No → Check
ULC2(U102)

Yes

PAM Control
Signal is OK.
See next page to
check
ASM & Mobile SW
Circuit.

Mobile S/W & ASM

Mode	GSM850 TX	PCS1900 TX	GSM850 RX	PCS1900 RX
VC1	H(2.7V)	L	L	L
VC2	L	H(2.7V)	L	L

4. TROUBLE SHOOTING

Mobile S/W & ASM

CHECKING FLOW


```
Check Pin 1, 2 of
SW400
with RF Cable
        │
        ▼
   ◇ Signal is ──No──→ Replace Mobile
     OK ? ◇              SW (SW400)
        │
       Yes
        ▼
Check Pin 1,2 of
FL401 ?
        │
       Yes
        ▼
   ◇ Control ──No──→ Check ULC2
   Signal is           (U102)
     OK ? ◇
        │
       Yes
        ▼
   ◇ Pin 3,7 ──No──→ Replace ASM
   Signal is          (FL401)
   normal ? ◇
        │
       Yes
        ▼
Mobile SW & ASM is
OK.
Check Antenna.
```
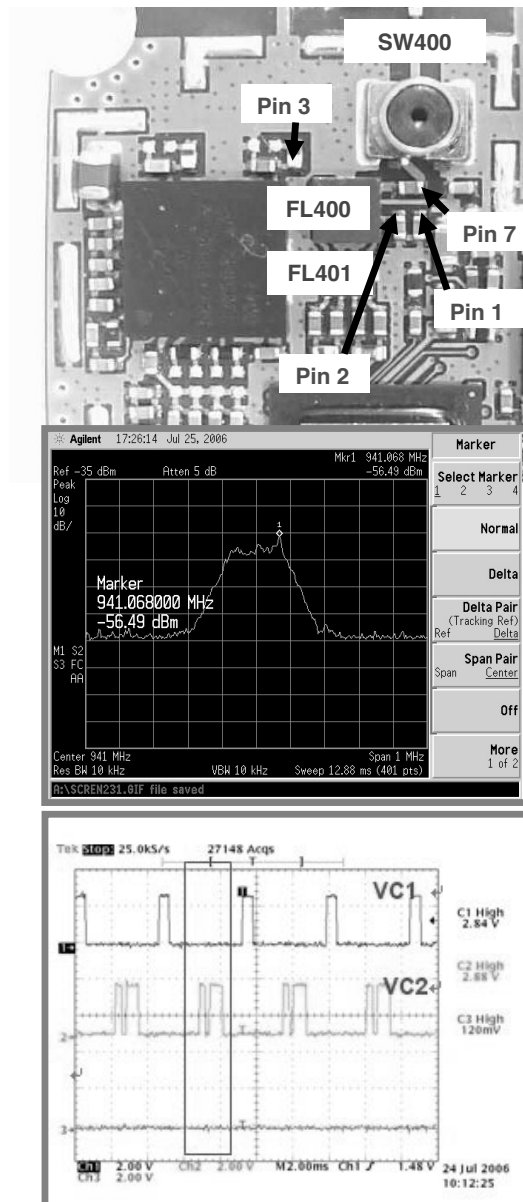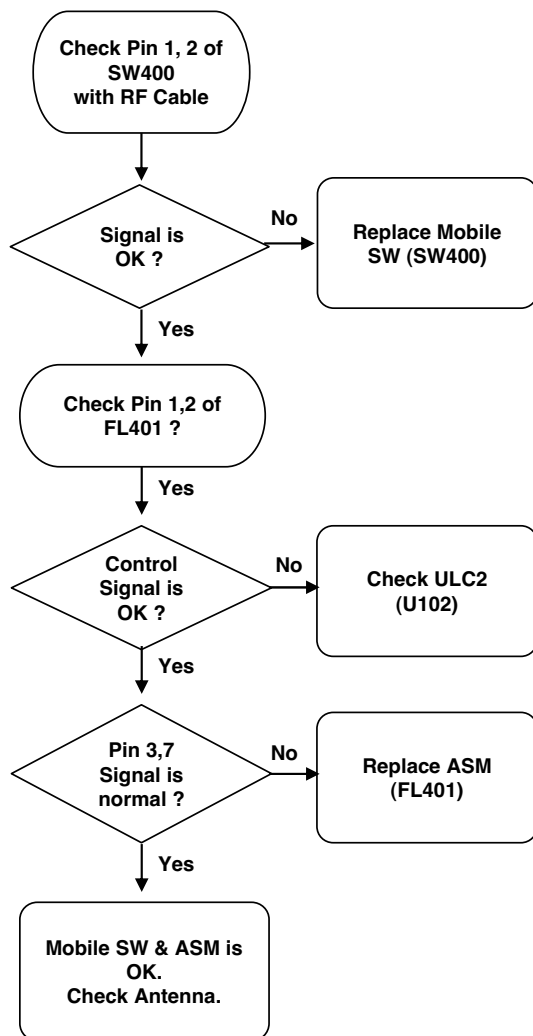
5. DOWNLOAD

5.1 Download Setup

Figure 5-1 describes Download setup
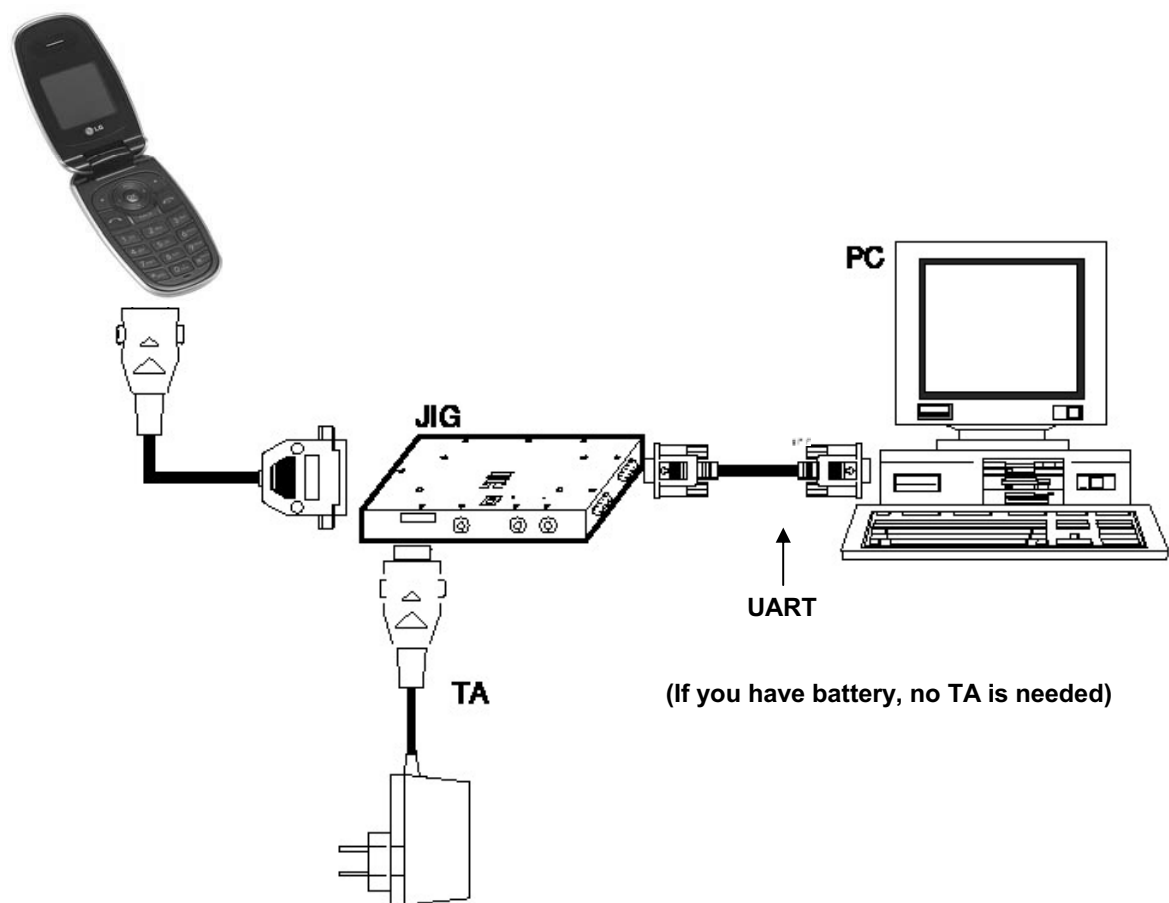
Figure 5-1. Download Setup

5.2 Download Process

5.2.1. Download step[1]
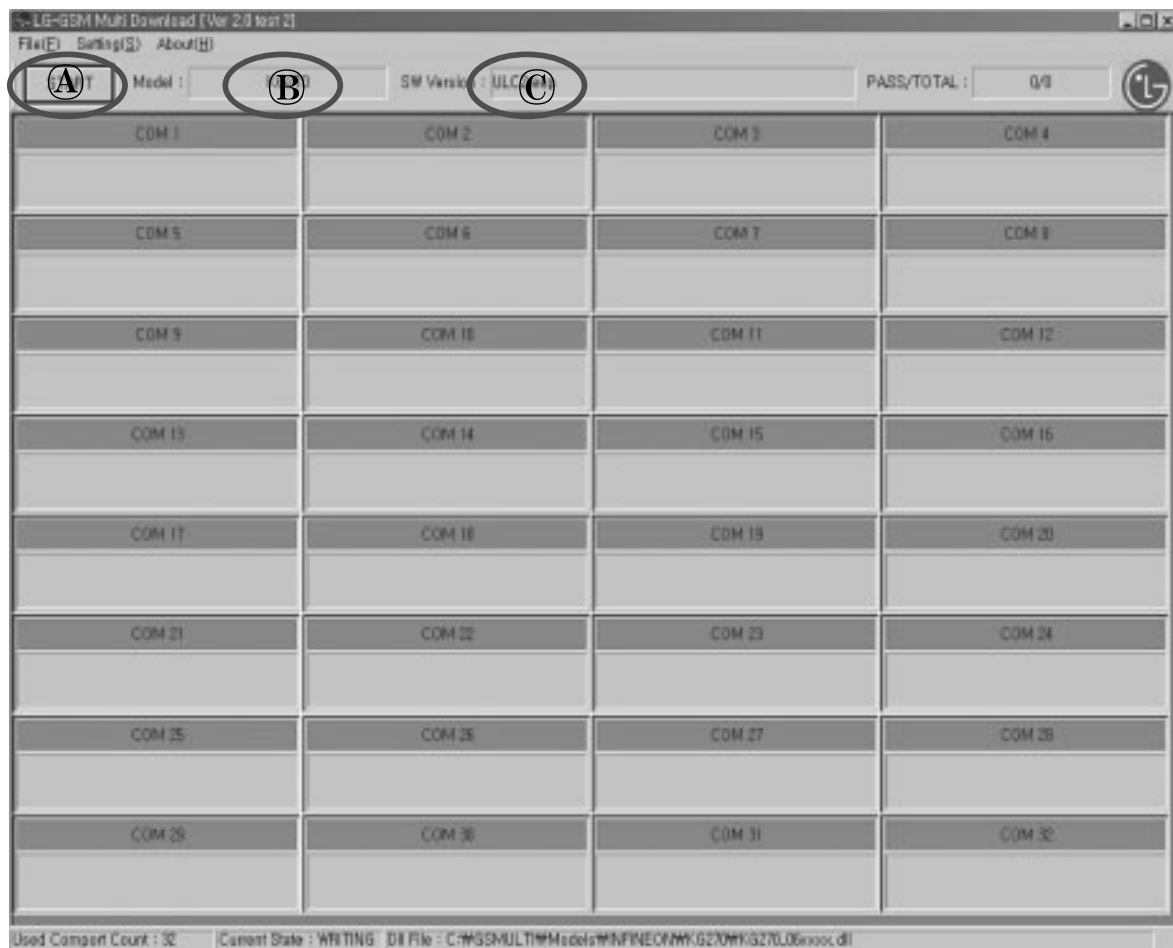
Ⓐ : Start or Stop download

Ⓑ : Selected configuration DLL file

Ⓒ : File name donwloading

File(F) → Exit(X) : End program

Setting(S) → Configuration : configuration download condition DLL, SW files and etc.

About(H) → MultiGSM : Provide version information

First, select Setting Menu.

5.2.2. Download step[2]
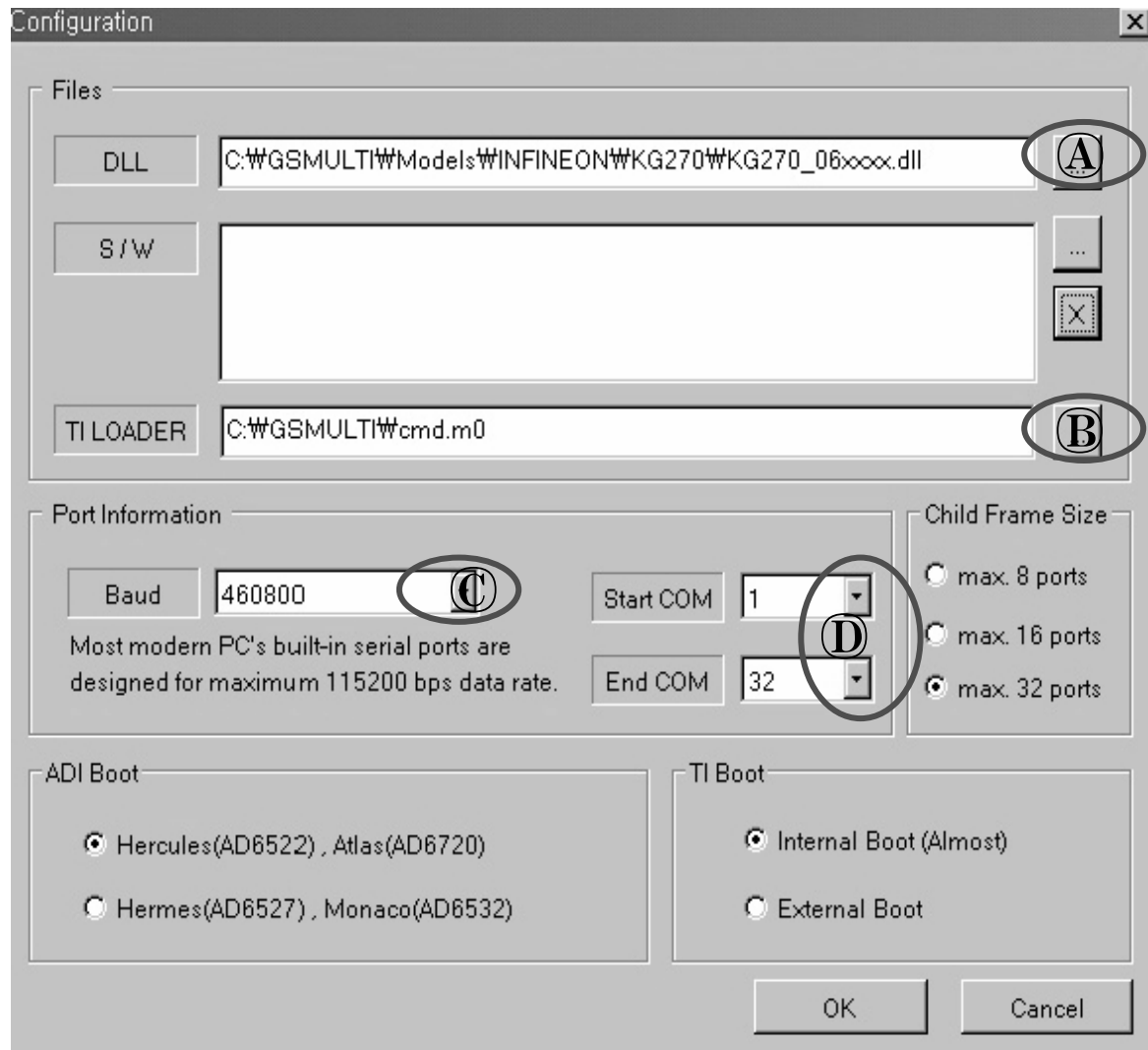
Ⓐ : Select a appropriated DLL file
  - You must select MG370_xxxxxx.DLL file.
Ⓑ : Select configuration file
  You must select cmd.m0 file
Ⓒ : Select download speed
  You must 460800. System supports maximum 460800bps.
Ⓓ : Select port
  select start and end port be operated

5.2.3. Download step[3]
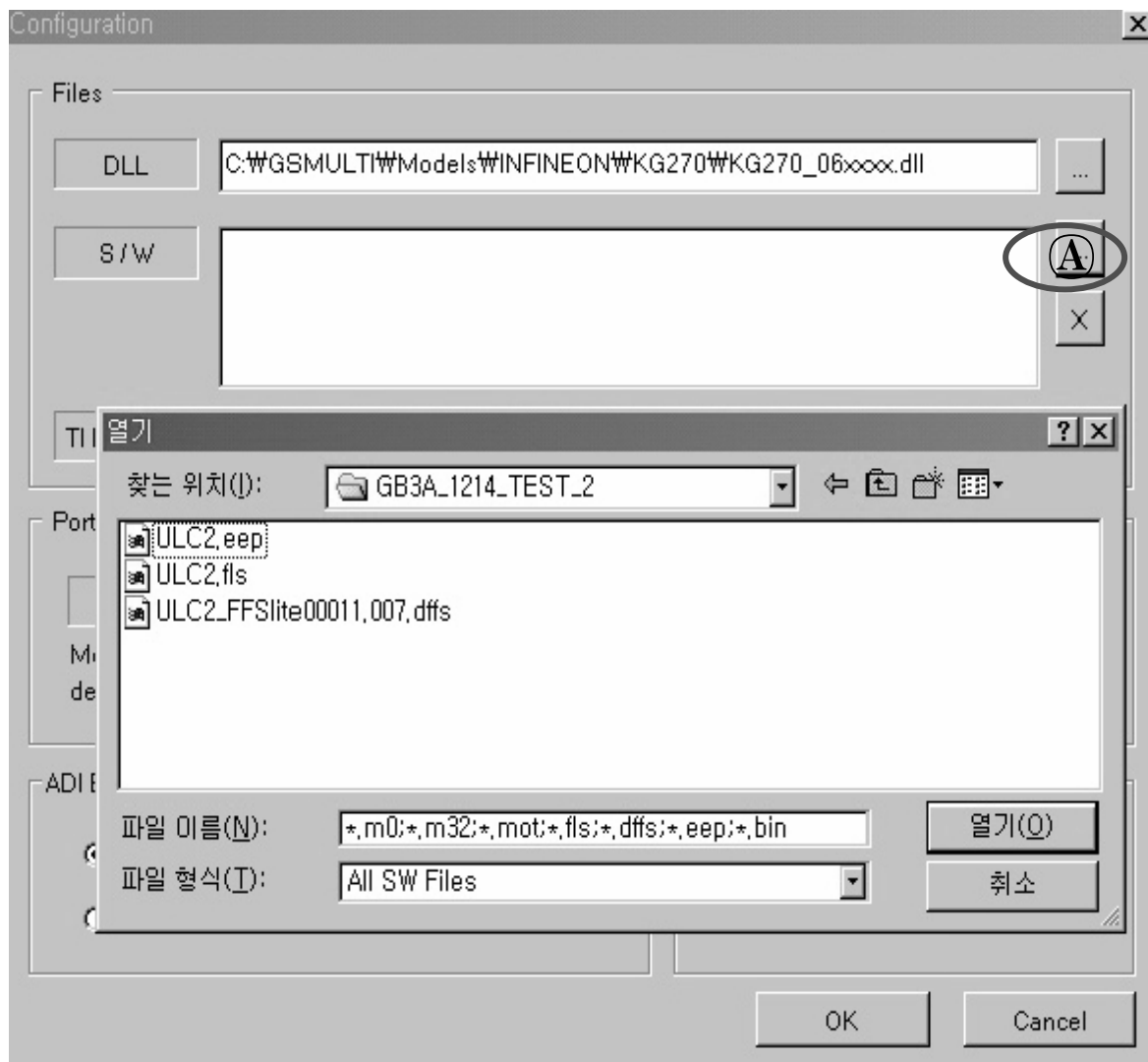
Ⓐ : Select files downloaded
   MG370 have 4 files, *.eep, *.fls, *.dffs and *.cust.
   But You must not select *.eep file.

5.2.4. Download step[4]
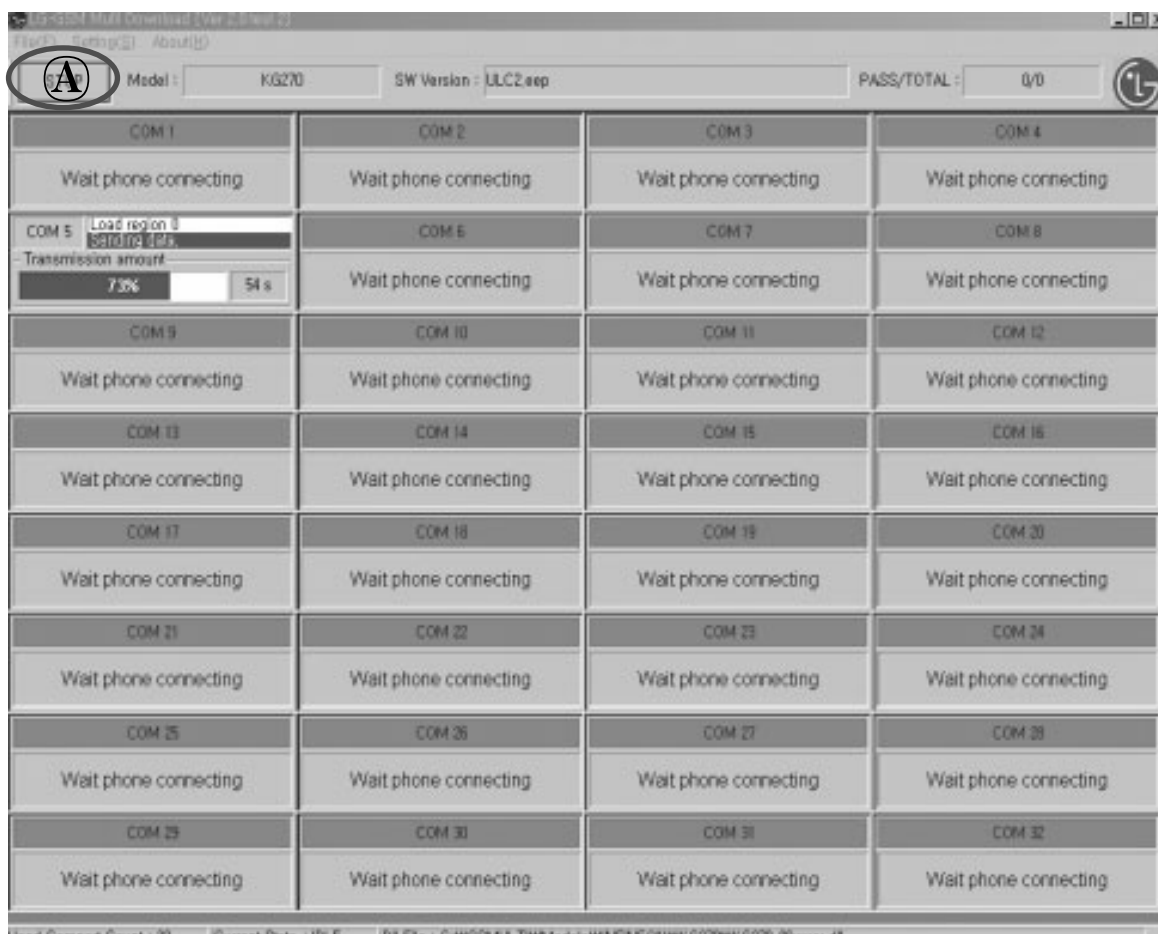
Ⓐ : Start download and stop download next step.
   If configuration is finished, then push start button and then button is changed to STOP.
   Turn on power of multi download and connector phones.
   If download is started, then push start button else program will download repeatedly.

5. DOWNLOAD

5.2.5. Download step[5]
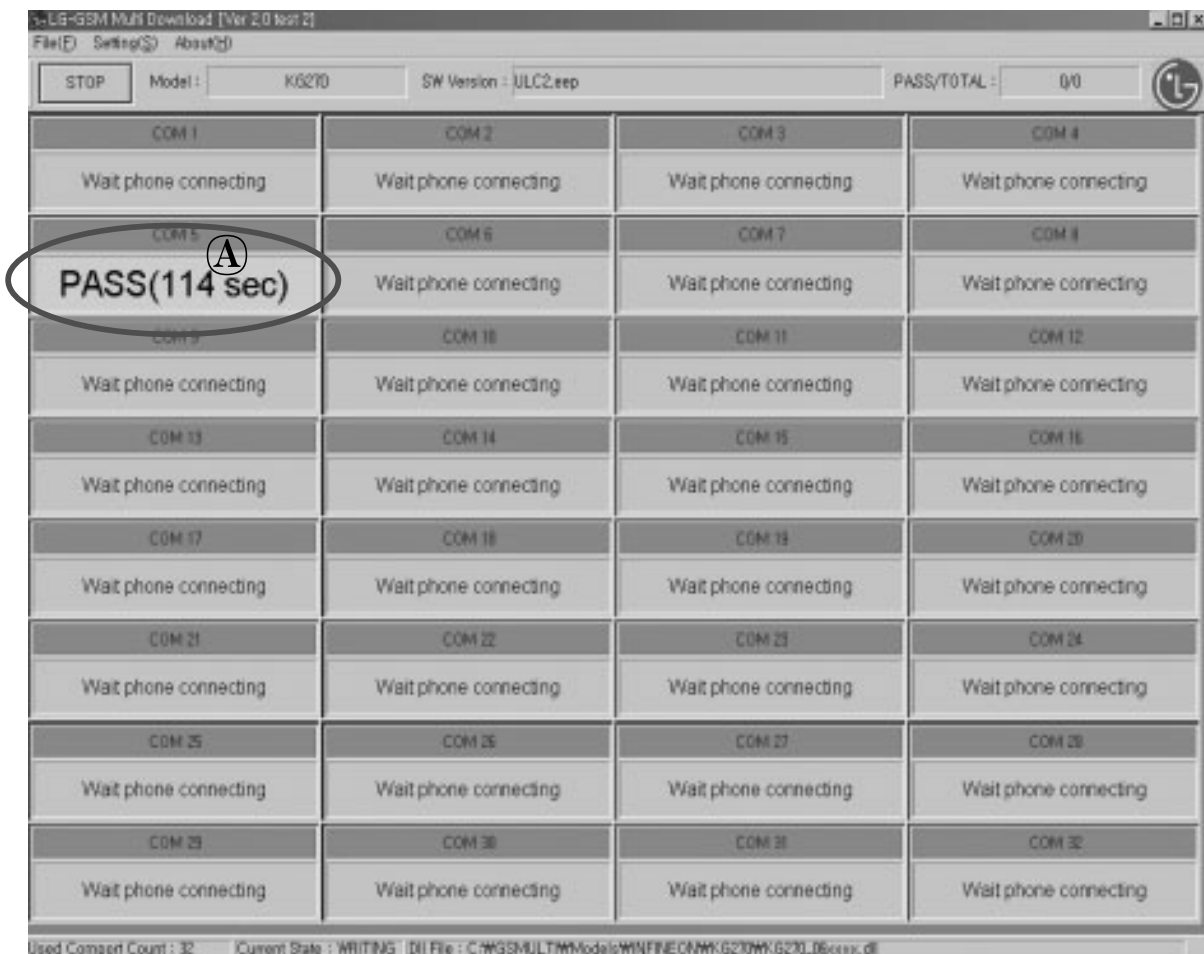
Ⓐ : This region appears donwload status.
    If download is finished, PASS or FAIL.message is showed.

6. BLOCK DIAGRAM

7. CIRCUIT DIAGRAM

7. CIRCUIT DIAGRAM

CONNECTOR

CHARGE PUMP

MICROPHONE

CHARGING

KEY_MATRIX

VIBRATOR

BATTERY CONNECTOR

LG Electronics Inc.

7. CIRCUIT DIAGRAM

7. CIRCUIT DIAGRAM

MODE	VC1	VC2
850/900 TX	H	L
1800/1900 TX	L	H
850/900/1800/1900 RX	L	L
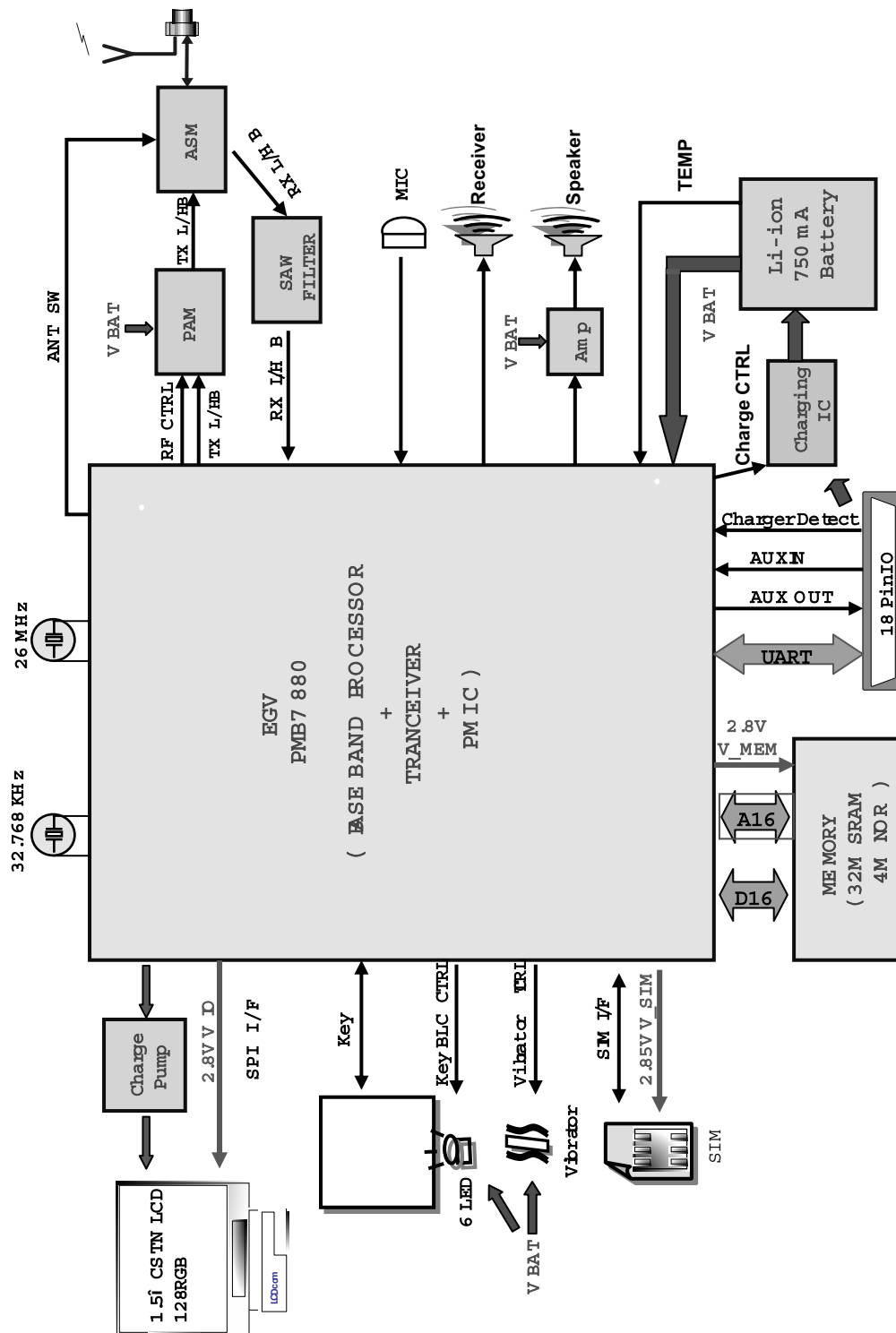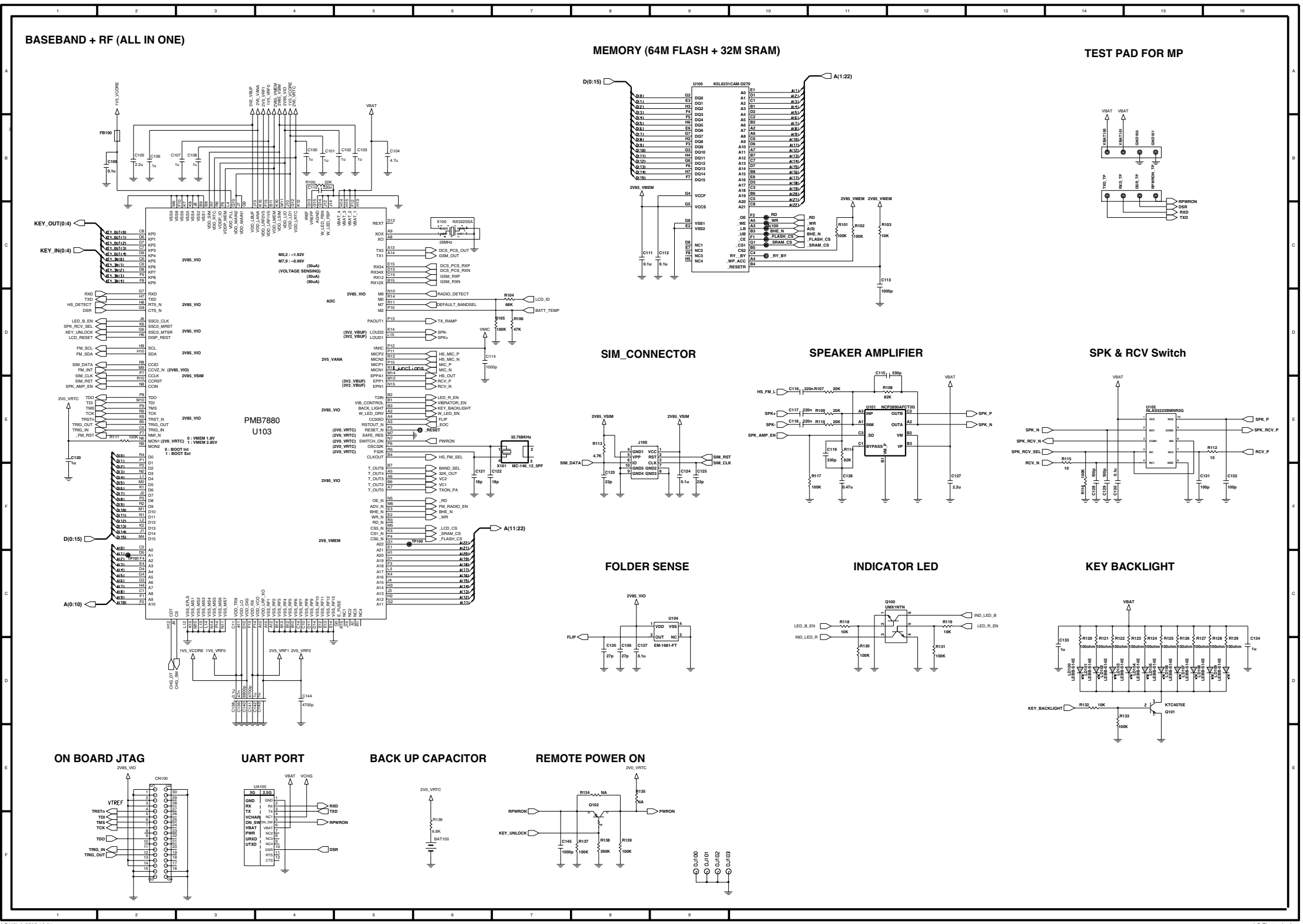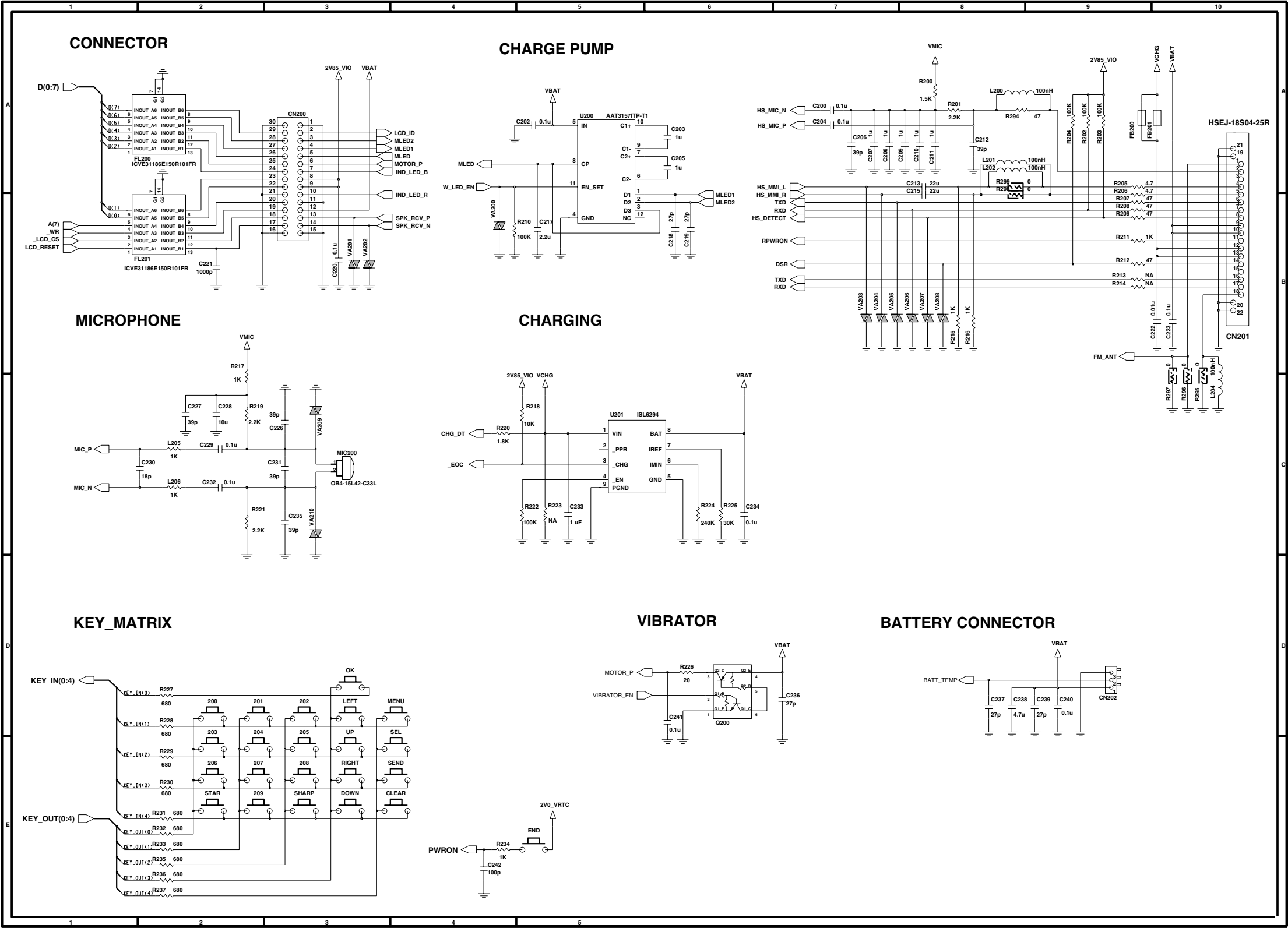
LGIC(42)-A-5505-10:01

LG Electronics Inc.
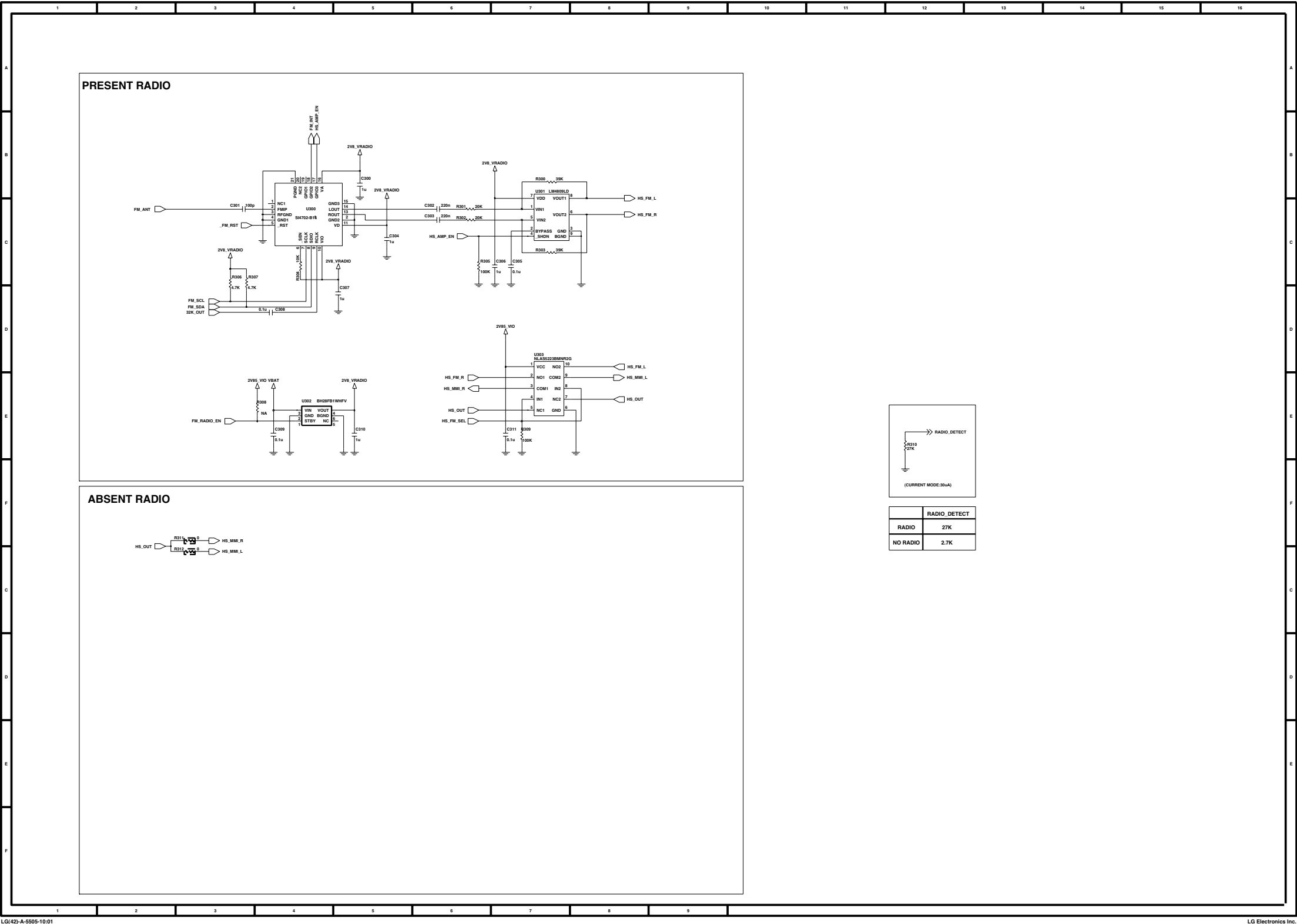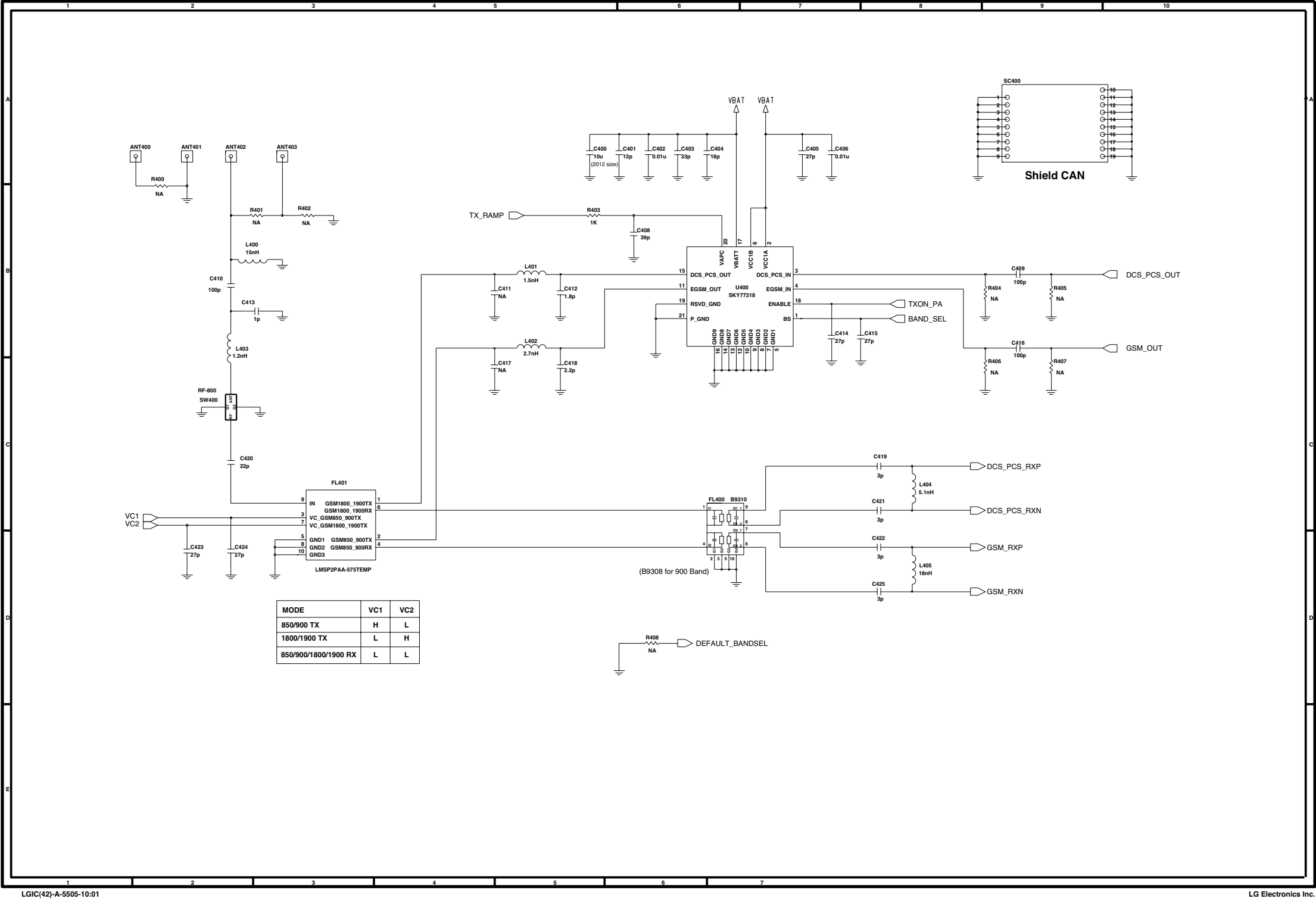
8. BGA IC Pin Check

<U103> PMB7880

○ : Used
● : Not used

8. BGA IC Pin Check

<U100> K5L6331CAM-D270

◯ : Used

● : Not used

9. PCB LAYOUT

<Folder on/off SW>
-Folder on/off operation

MENU UP SEL

LEFT OK RIGHT

DOWN
SEND END

CLEAR

200 201 202

203 204 205

206 207 208

STAR 209 SHARP
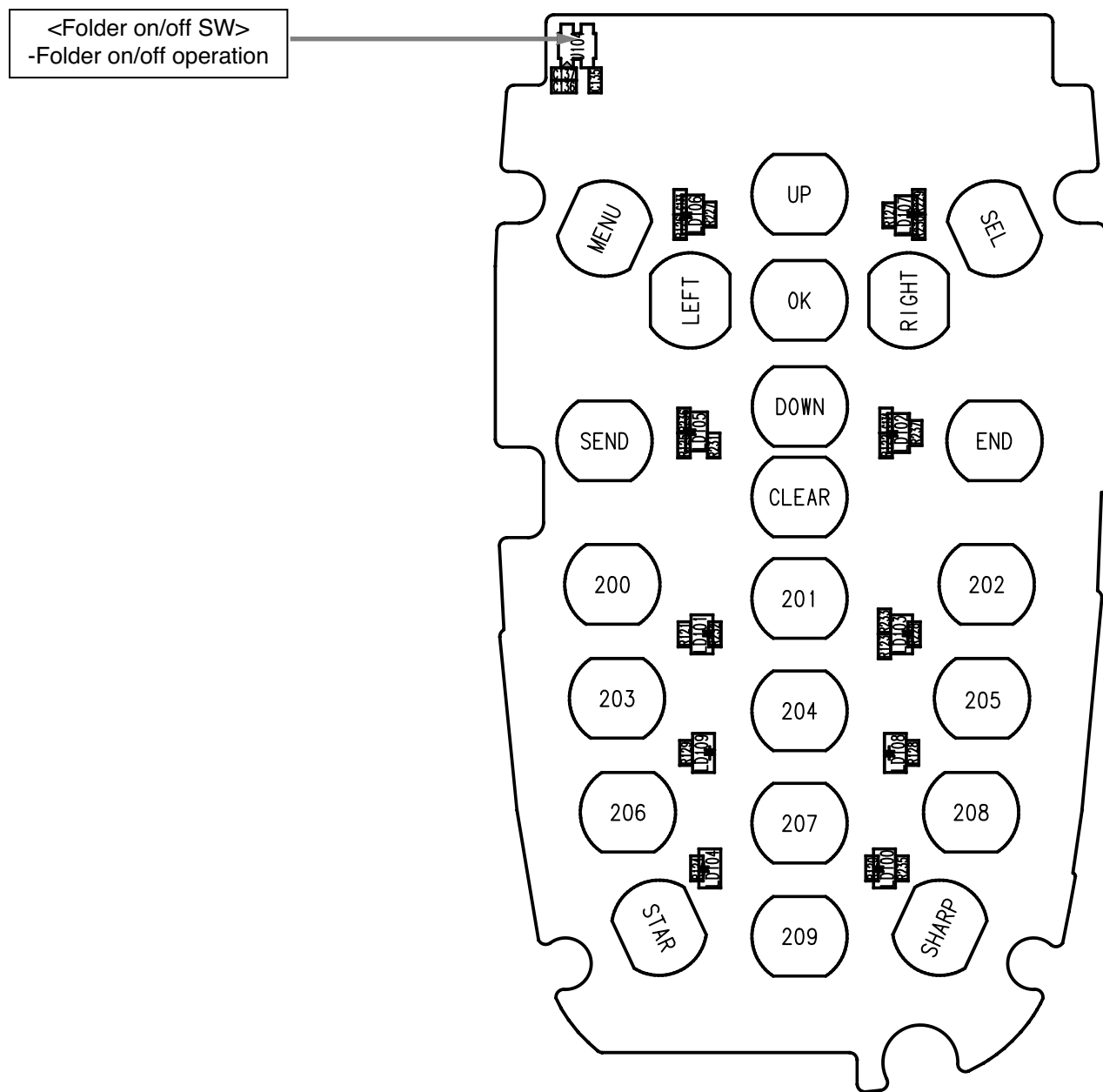
MG375-MAIN-SPFY0153601-1.1-TOP

9. PCB LAYOUT
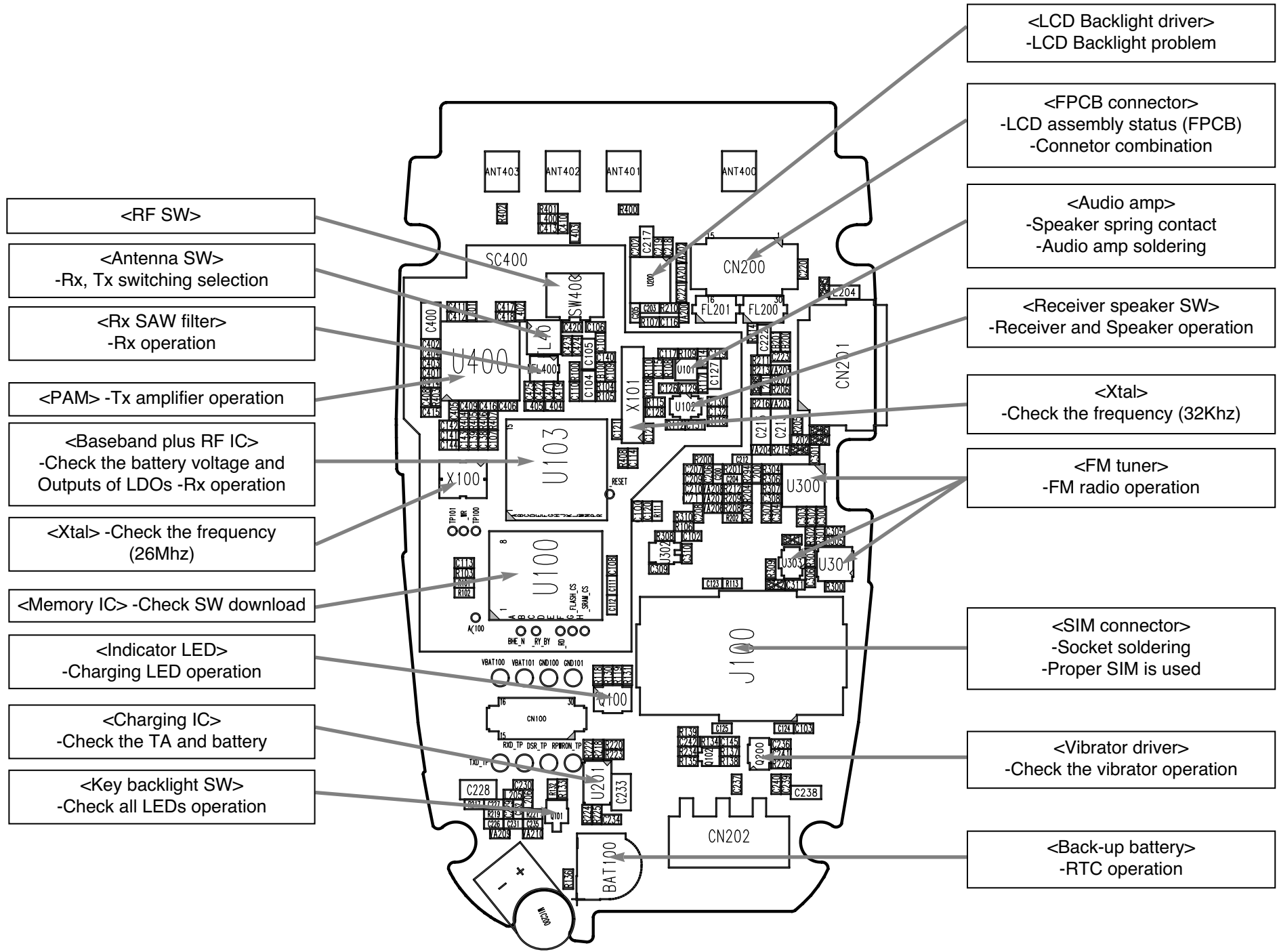
MG375-MAIN-SPFY0153601-1.1-BOT
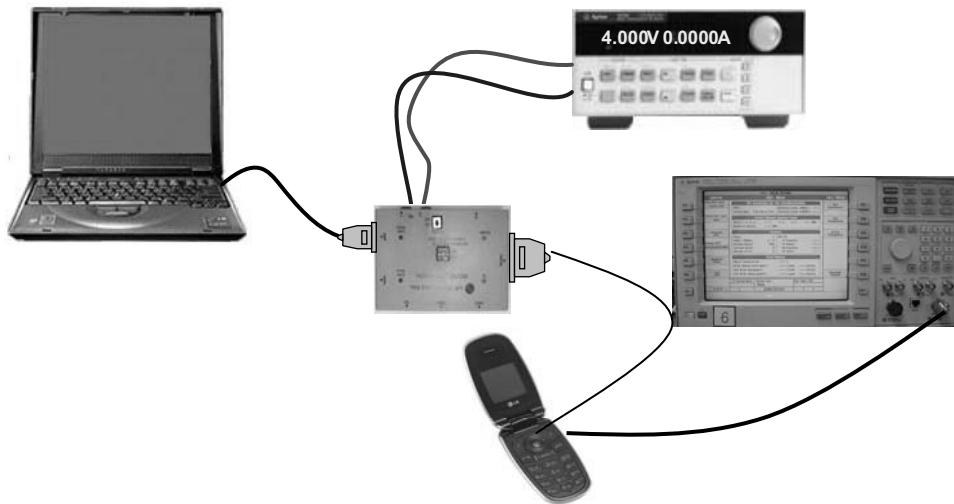
10. Calibration

10.1 Calibration Steps

10.1.1 Turn on the Phone.

10.1.2 Execute "HK_24.exe"

10.1.3 Click "SETTING" Menu
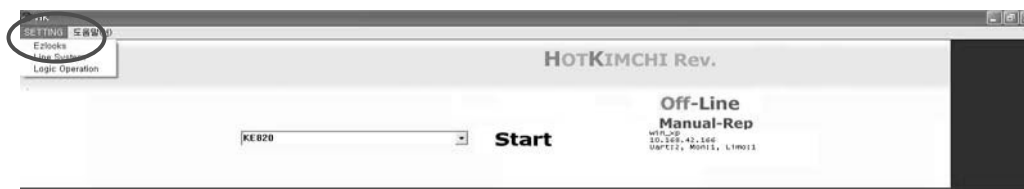
10.1.4 Setup "Ezlooks" menu such as the following figure
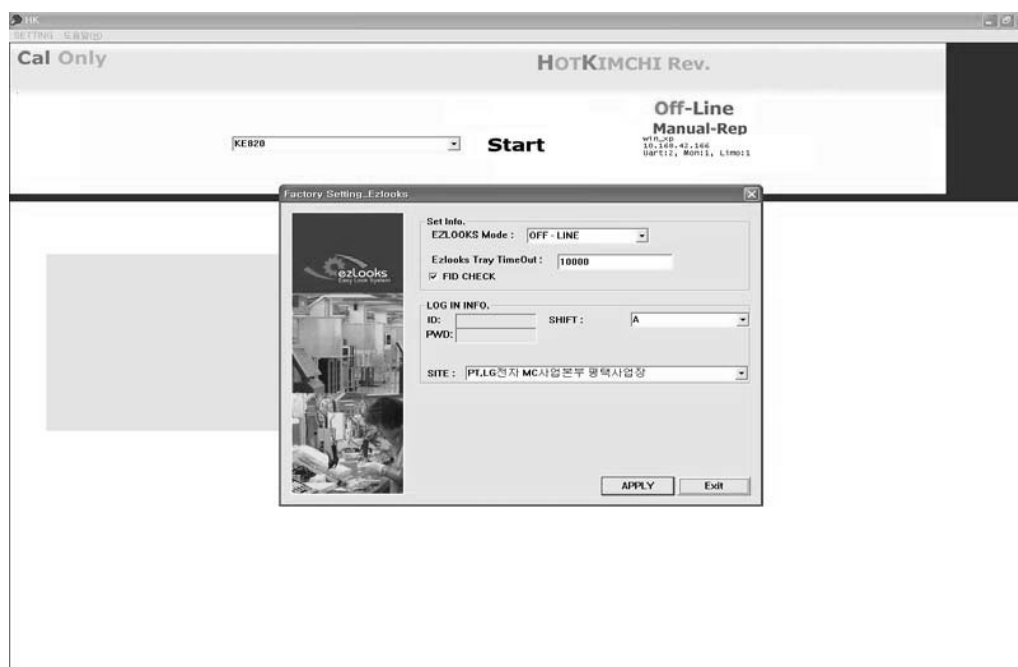
10.1.5 Setup "Line System" menu such as the following figure

Adjust the number of times.
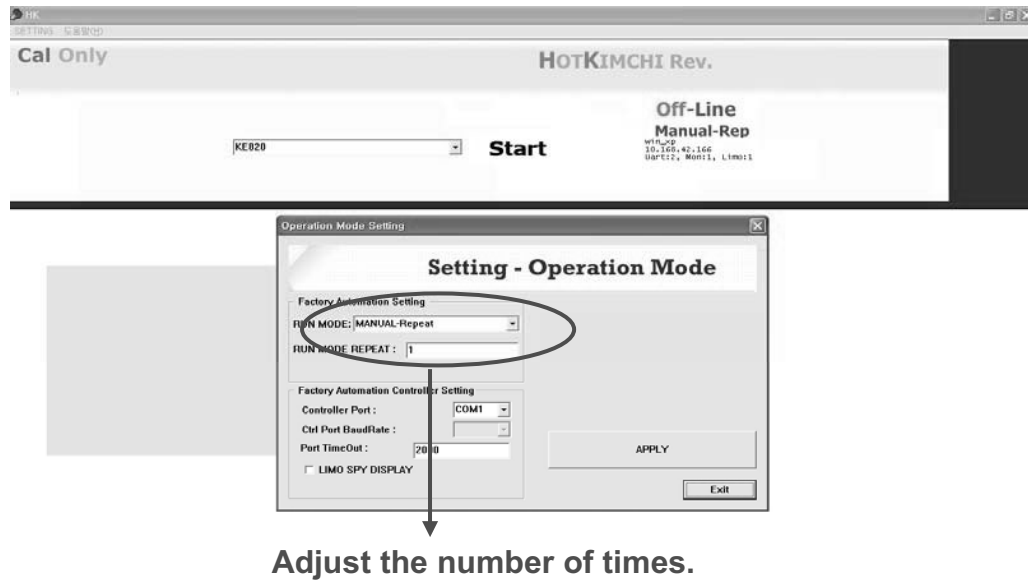
10.1.6 Setup Logic operation such as the following figure.

Operation Mode
1. By-Pass: not control by GPIB
2. Normal : control by GPIB

Setup UART Port

PWR : Power Supply
CELL :Call-Test Equipment
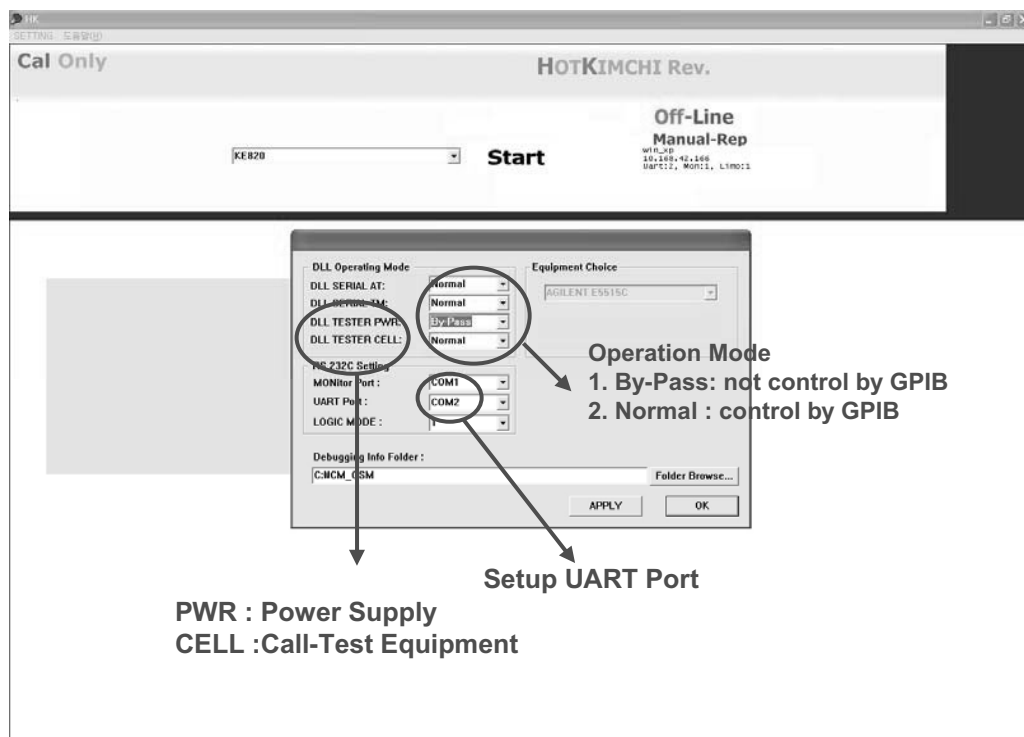
10. Calibration

10.1.7 Select "MODEL".

10.1.8 Click "START" for RF calibration

10.1.9 RF Calibration finishes.
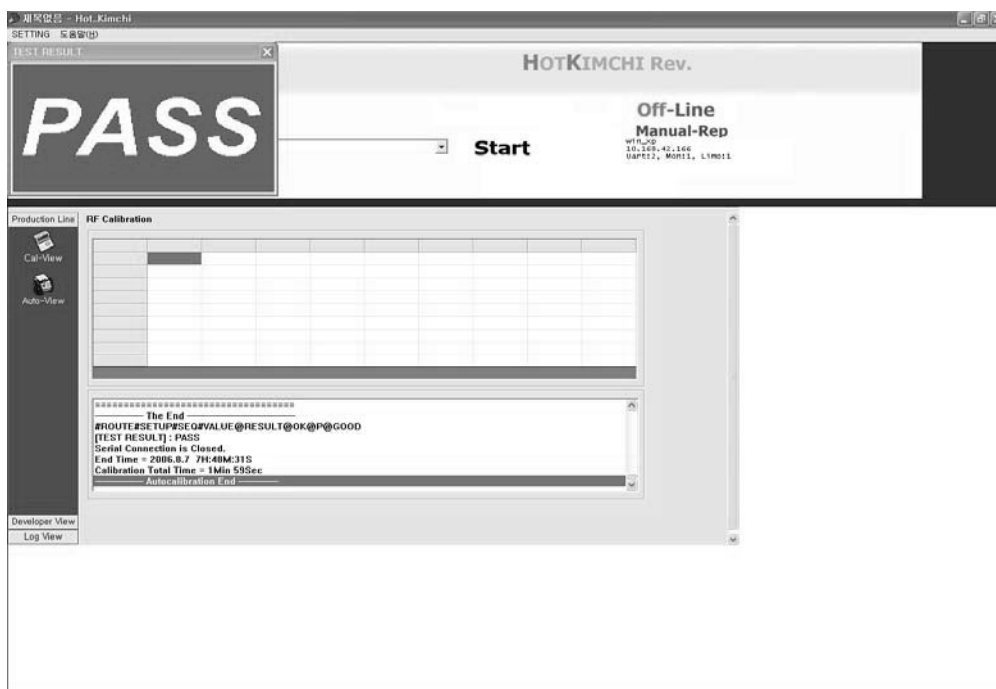
10.1.10 Calibration data will be saved to the following folder.

Saving format:
year/month/day_PASS
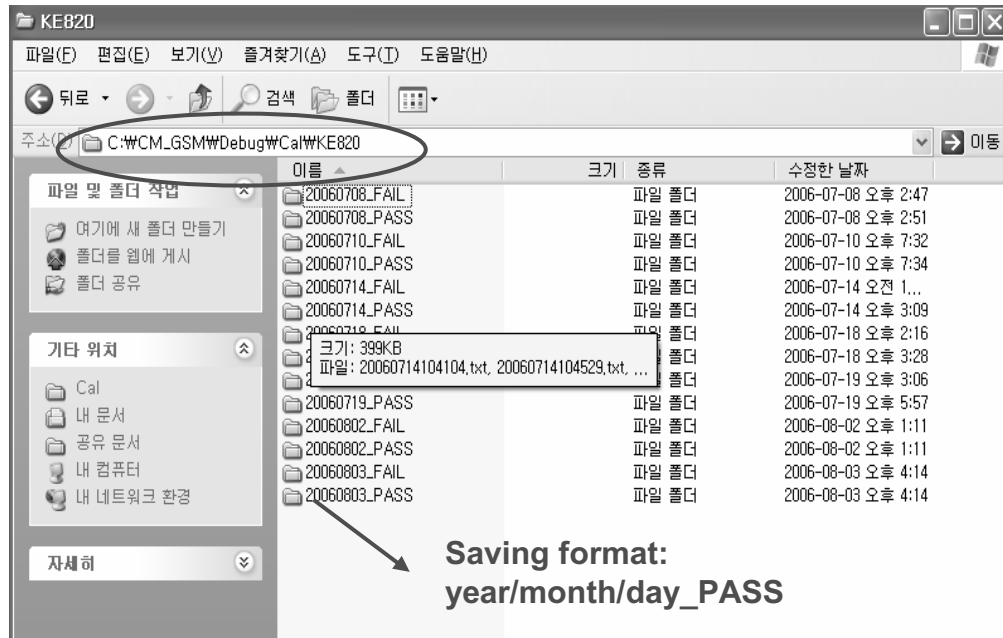
Notices:

1. The state of Phone is " test mode " during the CALIBRATION.

2. Calibration program automatically changes either "normal mode" or "ptest mode".

3. RF Calibration steps as follow:

TX Channel compensation: GSM850->PCS

RX Channel compensation: GSM850->PCS

4. Phone Operation Mode

11. Stand-alone Test

11.1 Test Program Setting

① Set COM Port.
② Check PC Baud rate.
③ Confirm EEPROM & Delta file prefix name
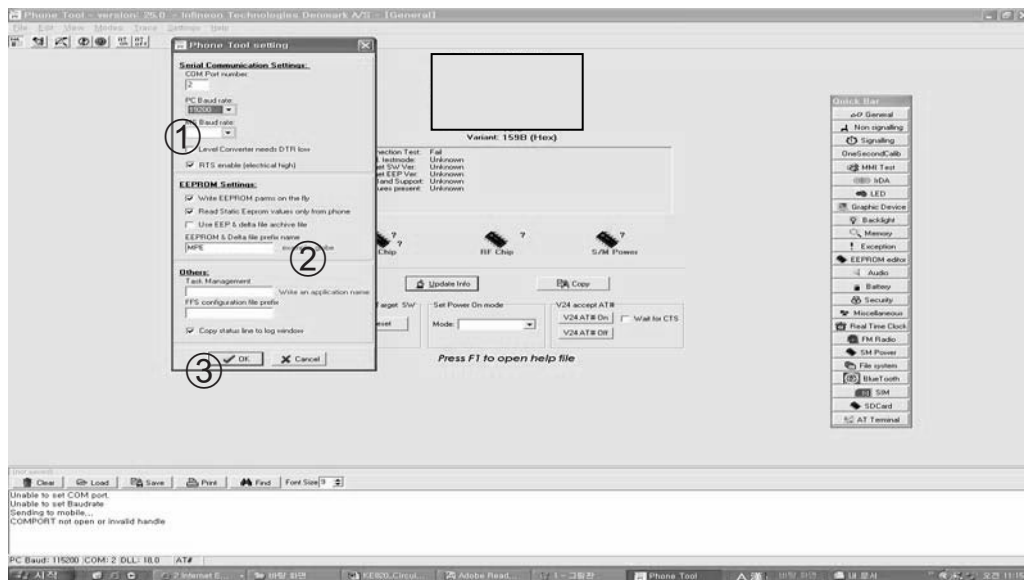
④ Click "Update Info" for communicating Phone and Test-Program.
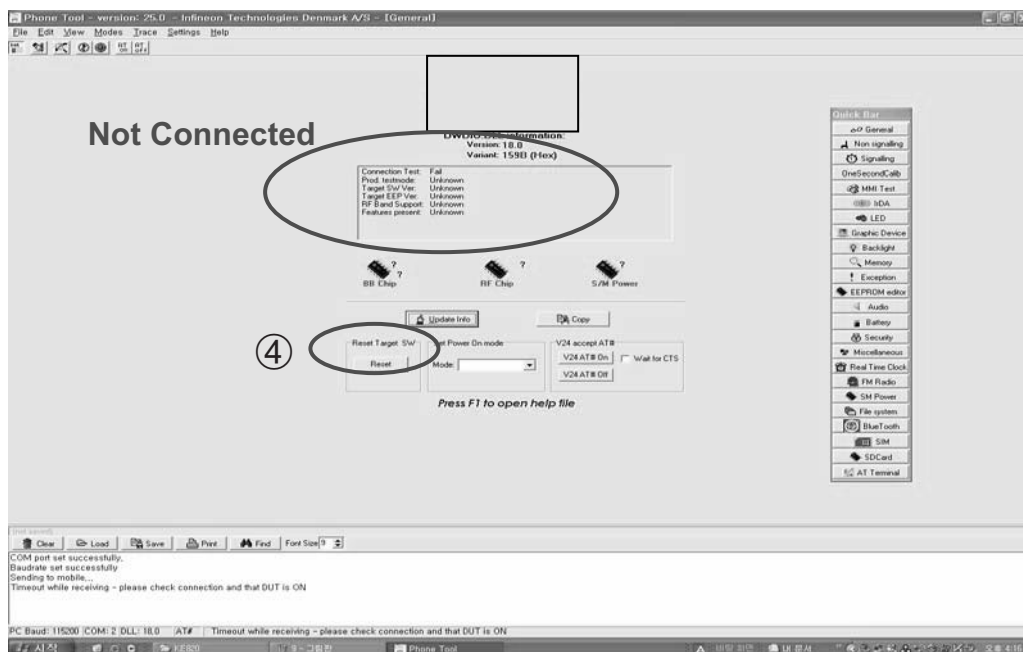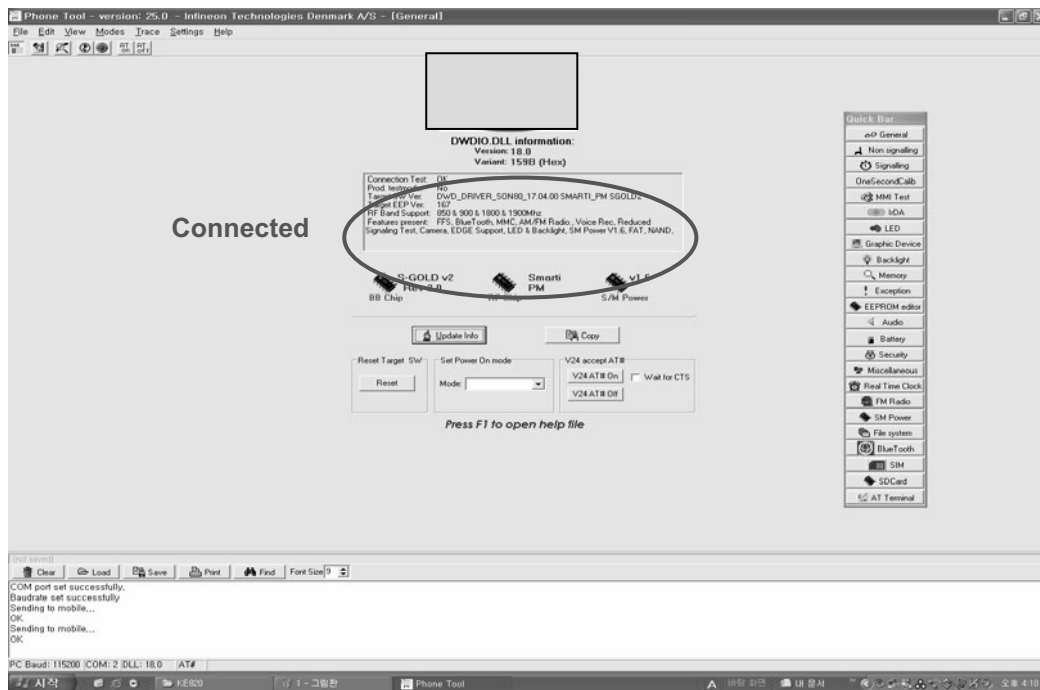
⑤ For the purpose of the Standalone Test, Change the Phone to "ptest mode" and then Click the "Reset" bar.

⑥ Select "Non signaling" in the Quick Bar menu. Then Standalone Test setup is finished.
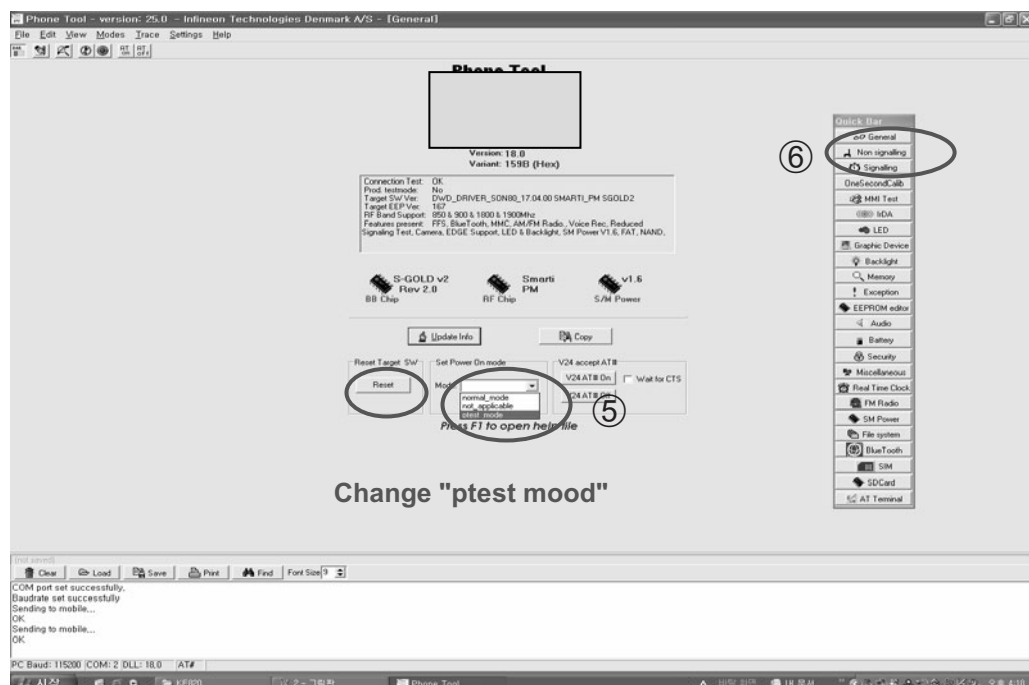
11.2 Tx Test

① Click "Non signaling mode" bar and then confirm "OK" text in the command line.
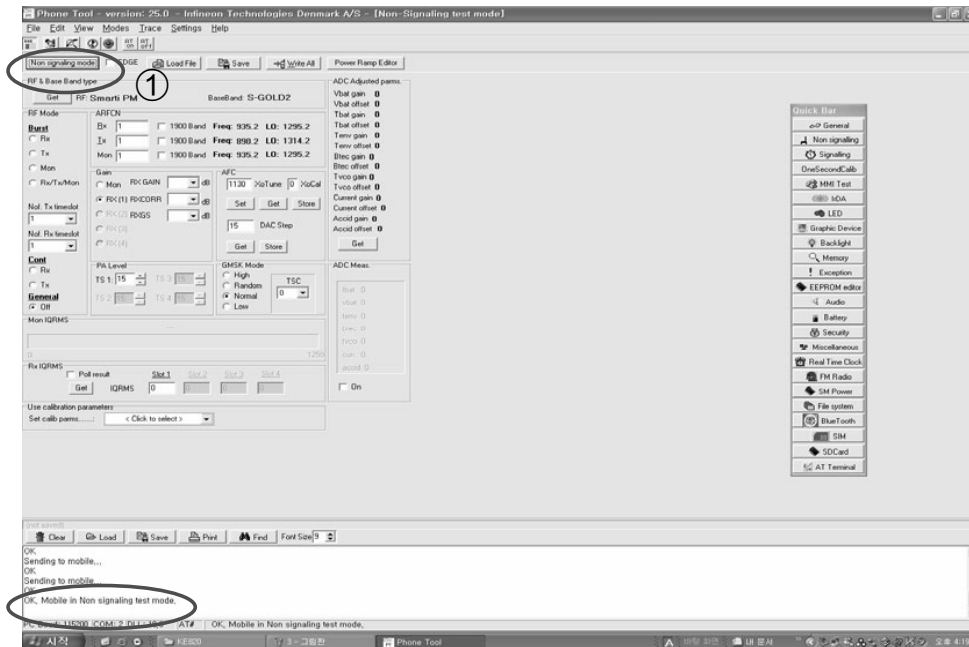
② Put the number of TX Channel in the ARFCN.
③ Select "Tx" in the RF mode menu and "PCL" in the PA Level menu.
④ Finally, Click "Write All" bar and try the efficiency test of Phone.
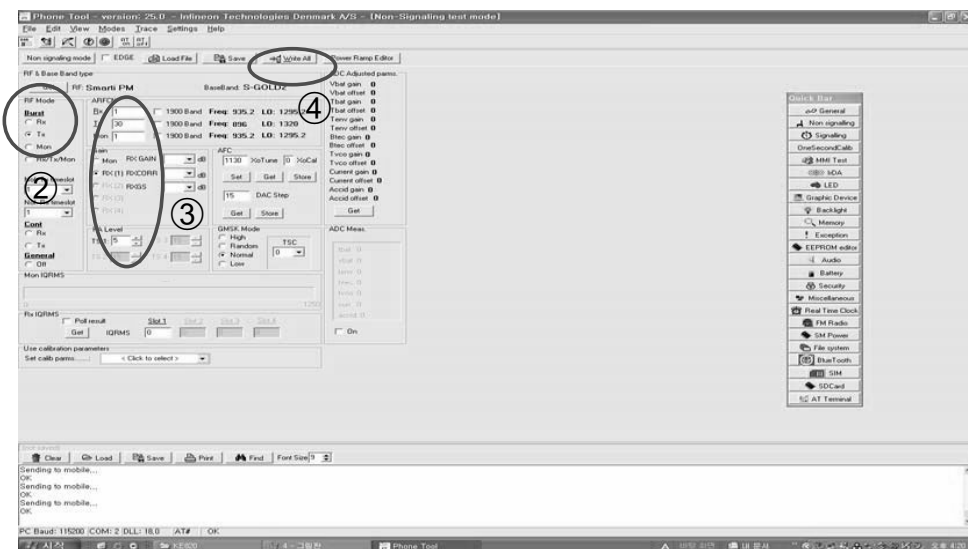
11.3 Rx Test

① Put the number of RX Channel in the ARFCN.

② Select "Rx" in the RF mode menu.

③ Finally, Click "Write All" bar and try the efficiency test of Phone.
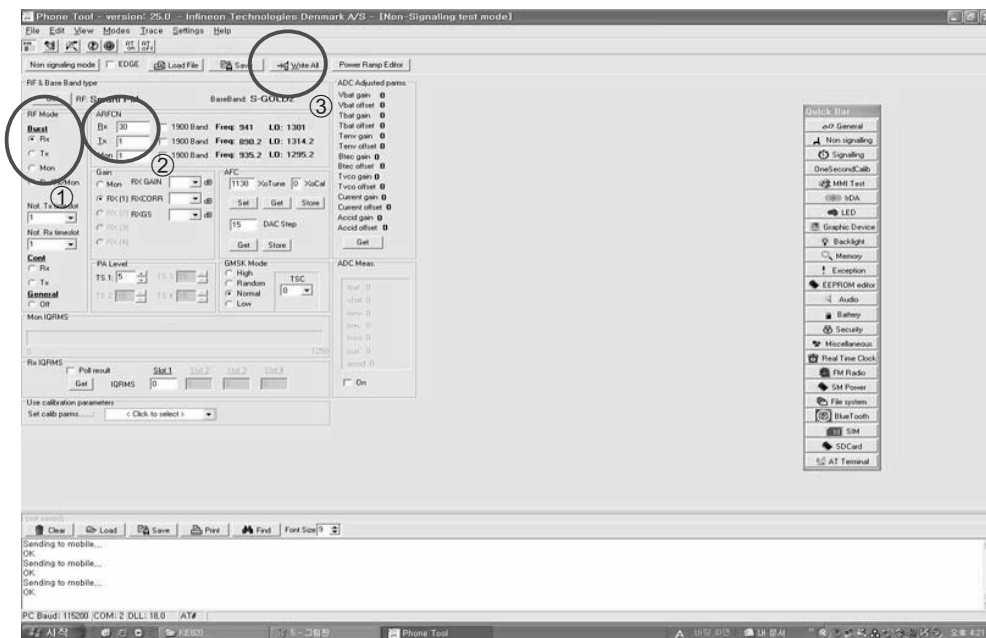
④ The Phone must be changed "normal mode" after finishing Test.

⑤ Change the Phone to "normal mode" and then Click the "Reset" bar.
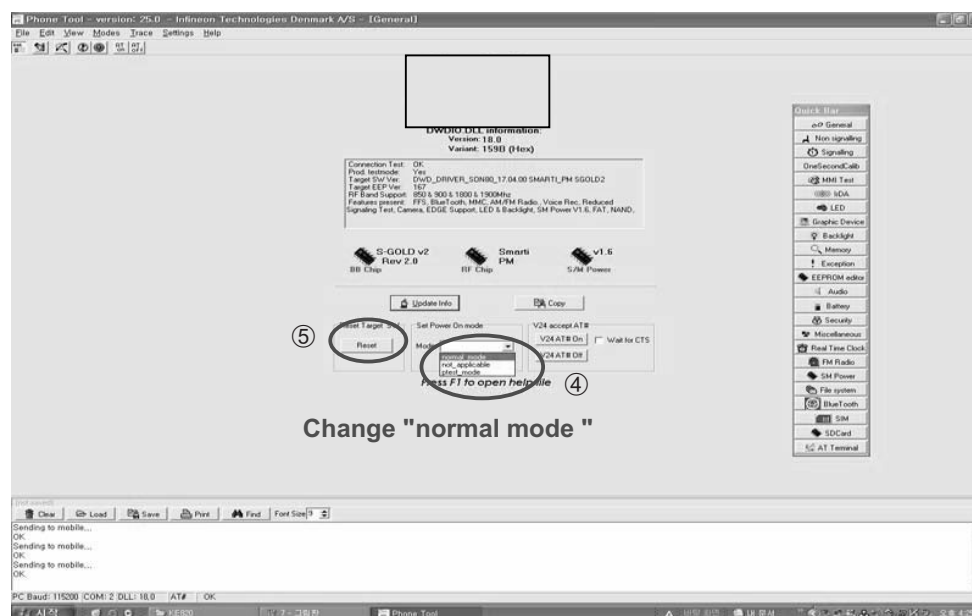
12. EXPLODED VIEW & REPLACEMENT PART LIST

12.1 EXPLODED VIEW
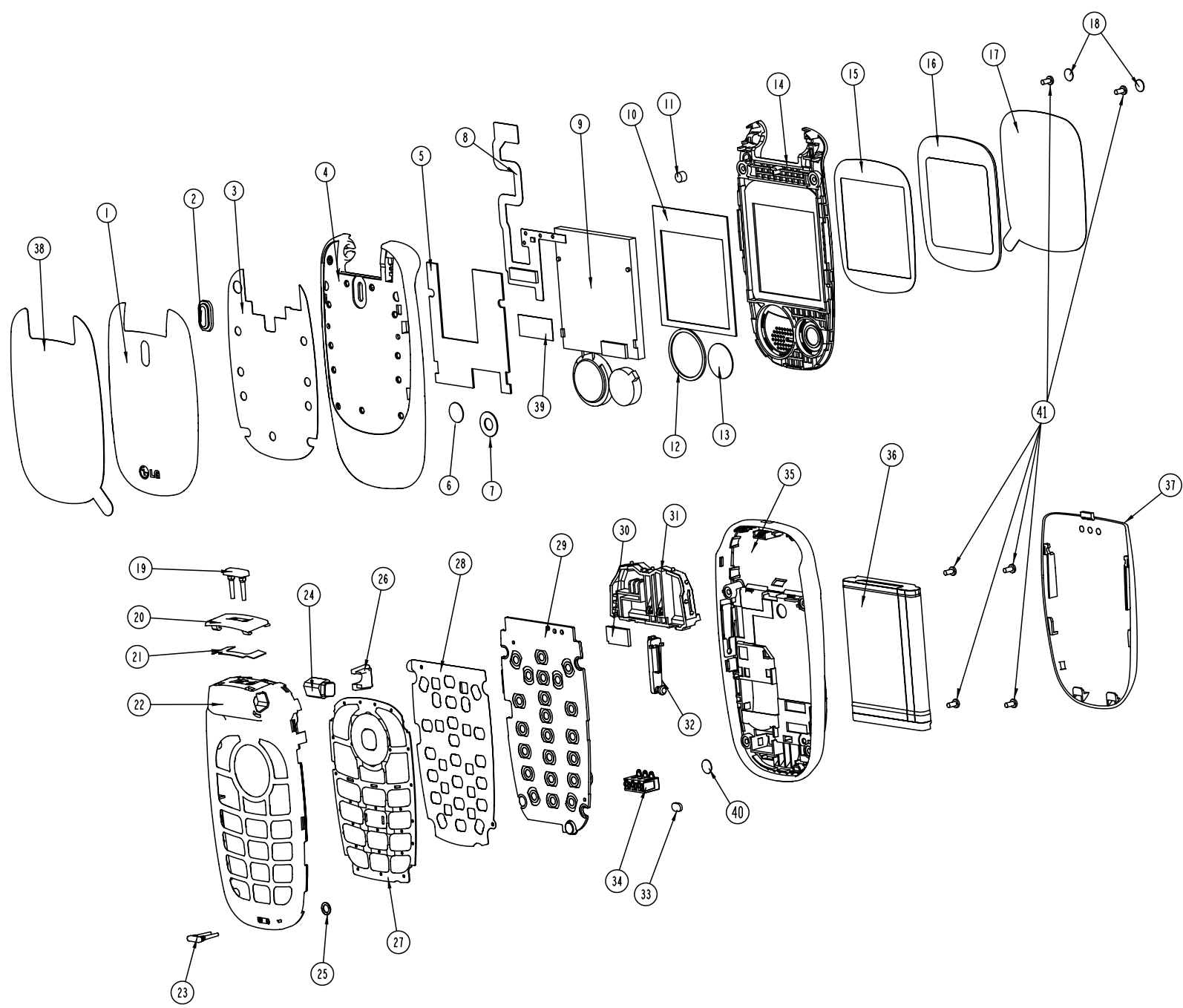
NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
41	SCREW	6	GMEY0002001	
40	A/S LABEL	1	MLAB0001102	
39	TAPE, FPCB	1	MTAJ0002001	
38	TAPE, PROTACTION DECO	1	MTAB0179501	
37	COVER,BATTERY	1	MCJA0044401	
36	BATTERY PACK,LI-ION	1	SBPL0089504	
35	COVER,REAR	1	MCJN0068501	
34	BATT CONNECTOR	1	ENZY0015701	
33	PAD,MIKE(REAR)	1	MPBH0030701	
32	CAP,EARPHONE JACK	1	MCCC0045401	
31	INTENNA	1	SNGF0026201	
30	PAD,FPCB,CONNECTOR	1	MPBF0021701	
29	PCB,ASSY MAIN	1	SAFY0210802	
28	DOME ASSY,METAL	1	ADCA0067001	
27	BUTTON,DIAL	1	MBJA0024501	
26	STOPPER,HINGE	1	MSGB0019901	
25	PAD,MIKE	1	MPBH0030701	
24	HINGE,FOLDER	1	MHFD0013702	
23	STOPPER,FOLDER	1	MSGB0019801	
22	COVER,FRONT	1	MCJK0072301	
21	TAPE,DECO HINGE	1	MDAG0028001	
20	DECO,HINGE	1	MDAG0028001	
19	STOPPER,HINGE	1	MSGB0019801	
18	CAP,SCREW	2	MCCH0107301	
17	TAPE,PROTECTION	1	MTAB0174501	
16	WINDOW,LCD	1	MWAC0080201	
15	TAPE,WINDOW	1	MTAD0069401	
14	COVER,FOLDER(LOWER)	1	MCJH0039301	
13	PAD,MOTOR(LOWER)	1	MPBG0062201	
12	FILTER,SPEAKER	1	MPBN0043101	
11	MAGNET,SWITCH?	1	MMAA0005201	
10	PAD,LCD(LOWER)	1	MPBG0062201	
9	LCD	1	SVLM0024701	
8	FPCB	1	SACY0061201	
7	PAD,MOTOR(UPPER)	1	MPBJ0044701	
6	PAD,SPEAKER	1	MPBN0041701	
5	PAD,LCD(UPPER)	1	MPBG0062301	
4	COVER,FOLDER(UPPER)	1	MCJJ0048701	
3	TAPE,DECO	1	MTAA0137201	
2	INDICATOR,LED	1	MIAA0021501	
1	DECO,FOLDER	1	MDAE0040001	
NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK

ASS'Y EXPLODED VIEW
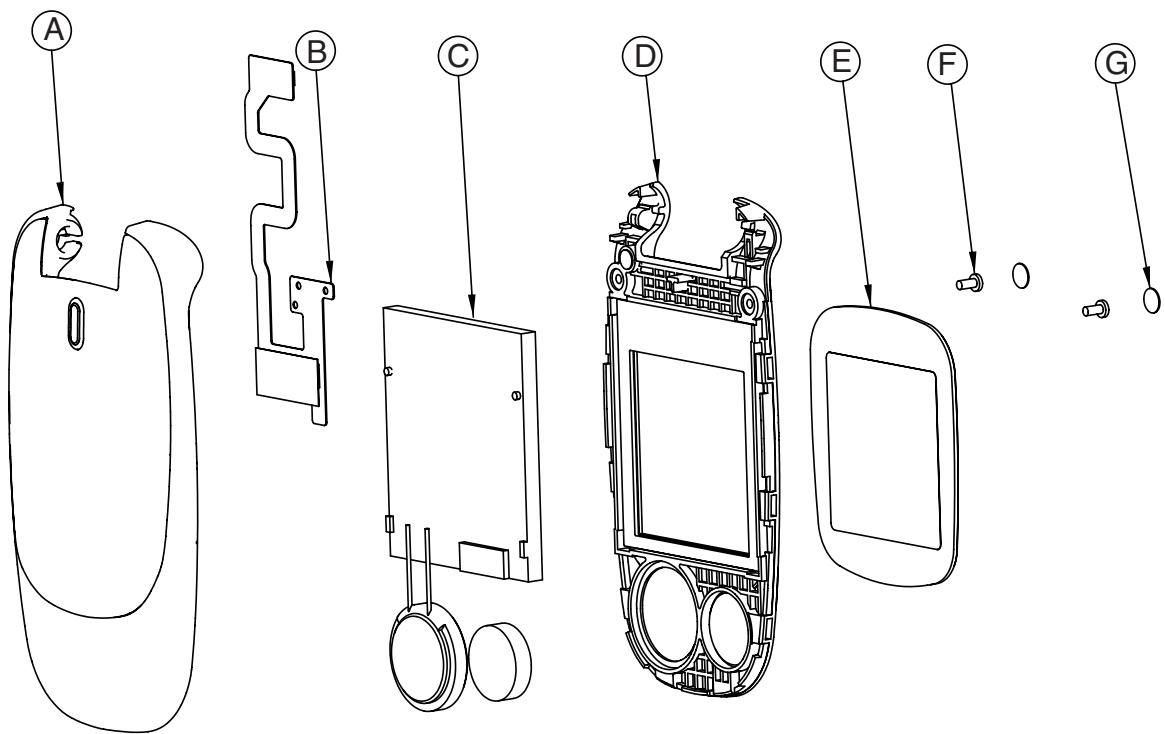
NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
P	COVER,BATTERY	1	MCJA0044401	
O	BATTERY PACK,LI-ION	1	SBPL0089504	
N	COVER ASSY,REAR	1	ACGM0091201	
M	PCB ASSY,MAIN	1	SAFY0210802	
L	DOME ASSY,METAL	1	ADCA0067001	
K	BUTTON,DIAL	1	MBJA0024501	
J	STOPPER,HINGE	1	MSGB0019901	
I	HINGE,FOLDER	1	MHFD0013702	
H	COVER ASSY,FRONT	1	ACGK0089901	
G	CAP,SCREW	2	MCCH0107301	
F	SCREW	6	GMEY0002001	
E	WINDOW,LCD	1	MWAC0080201	
D	COVER ASSY,FOLDER(LOWER)	1	ACGH0049301	
C	LCD	1	SVLM0024701	
B	FPCB	1	SACY0061201	
A	COVER ASSY,FOLDER(UPPER)	1	ACGJ0064301	
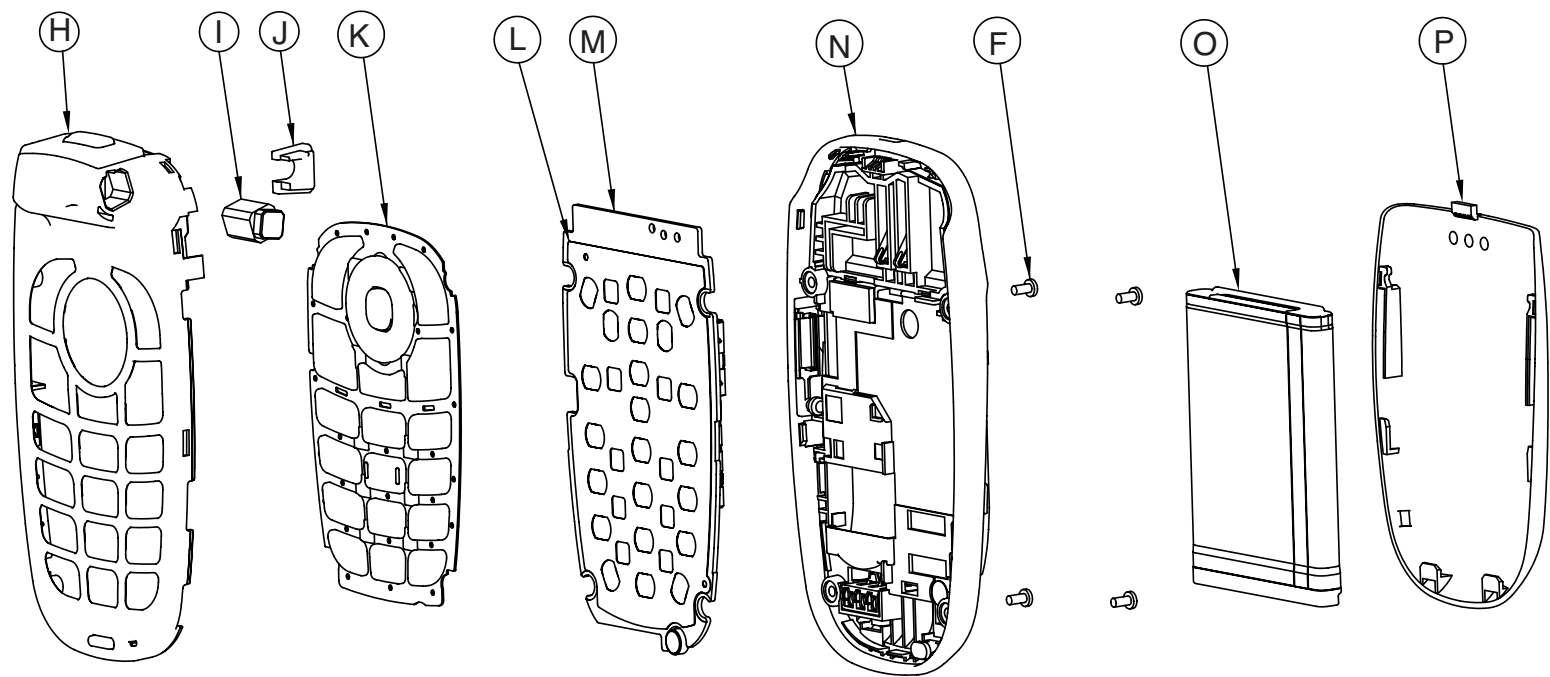
12.2 Replacement Parts
<Mechanic component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
1		GSM(FOLDER)	TGFF0097701		Black	
2	AAAY00	ADDITION	AAAY0247801		Black	
3	MCJA00	COVER,BATTERY	MCJA0044401	MOLD, PC LUPOY SC-1004A, , , , ,	Black	P, 37
2	APEY00	PHONE	APEY0423302		Black	
3	ACGG00	COVER ASSY,FOLDER	ACGG0083301		Black	
4	ACGH00	COVER ASSY,FOLDER(LOWER)	ACGH0049301		Black	D
5	MCJH00	COVER,FOLDER(LOWER)	MCJH0039301	MOLD, PC LUPOY SC-1004A, , , , ,	Black	14
5	MMAA00	MAGNET,SWITCH	MMAA0001601	7100 magnetic	Silver	
5	MPBG00	PAD,LCD	MPBG0062201	COMPLEX, (empty), , , , ,	Without Color	13
5	MPBJ00	PAD,MOTOR	MPBJ0048201	CUTTING, NS, , , , ,	Without Color	
5	MPBN00	PAD,SPEAKER	MPBN0043101	COMPLEX, (empty), , , , ,	Without Color	
5	MTAD00	TAPE,WINDOW	MTAD0069401	COMPLEX, (empty), , , , ,	Without Color	15
4	ACGJ00	COVER ASSY,FOLDER(UPPER)	ACGJ0064301		Black	A
5	MCJJ00	COVER,FOLDER(UPPER)	MCJJ0048701	MOLD, PC LUPOY SC-1004A, , , , ,	Silver	4
5	MDAE00	DECO,FOLDER(UPPER)	MDAE0040001	MOLD, PC LUPOY SC-1004A, , , , ,	Black	1
5	MIAA00	INDICATOR,LED	MIAA0021501	COMPLEX, (empty), , , , ,	Without Color	2
5	MPBG00	PAD,LCD	MPBG0062301	COMPLEX, (empty), , , , ,	Without Color	5
5	MPBJ00	PAD,MOTOR	MPBJ0044701	COMPLEX, (empty), , , , ,	Without Color	9
5	MPBN00	PAD,SPEAKER	MPBN0041701	COMPLEX, (empty), , , , ,	Without Color	6
5	MTAA00	TAPE,DECO	MTAA0137201	COMPLEX, (empty), , , , ,	Without Color	3
5	MTAB00	TAPE,PROTECTION	MTAB0179501	COMPLEX, (empty), , , , ,	Without Color	38
4	ACGK00	COVER ASSY,FRONT	ACGK0089901		Black	H
5	MCJK00	COVER,FRONT	MCJK0072301	MOLD, PC LUPOY SC-1004A, , , , ,	Black	22
5	MDAG00	DECO,FRONT	MDAG0028001	MOLD, PC LUPOY SC-1004A, , , , ,	Silver	21
5	MFBD00	FILTER,MIKE	MFBD0023701	COMPLEX, (empty), , , , ,	Without Color	
5	MSGB00	STOPPER,HINGE	MSGB0019801	MOLD, Urethane Rubber S190A, , , , ,	Silver	19,23
5	MSGC00	STOPPER,FOLDER	MSGC0000601	MOLD, Urethane Rubber S190A, , , , ,	Black	
5	MTAA00	TAPE,DECO	MTAA0139101	COMPLEX, (empty), , , , ,	Without Color	
4	GMEY00	SCREW MACHINE,BIND	GMEY0002001	1.4 mm,3 mm,MSWR3(BK) ,B ,+ ,HEAD t=0.6, HEAD d2.7		
4	MCCH00	CAP,SCREW	MCCH0107301	COMPLEX, (empty), , , , ,	Black	18,G
4	MHFD00	HINGE,FOLDER	MHFD0013702	COMPLEX, (empty), , , , ,	Without Color	I,24
4	MIDZ00	INSULATOR	MIDZ0136901	COMPLEX, (empty), , , , ,	Without Color	

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	MRDY00	REINFORCE	MRDY0000601	COMPLEX, (empty), , , , ,	White	
4	MSGB00	STOPPER,HINGE	MSGB0019901	MOLD, PC LUPOY SC-1004A, , , , ,	Silver	J
4	MTAB00	TAPE,PROTECTION	MTAB0174501	COMPLEX, (empty), , , , ,	Without Color	17
4	MTAJ00	TAPE,FLEXIBLE PCB	MTAJ0002001	COMPLEX, (empty), , , , ,	Without Color	39
4	MWAC00	WINDOW,LCD	MWAC0080201	CUTTING, PMMA MR 200, , , , ,	Black	16,E
4	SACY00	PCB ASSY,FLEXIBLE	SACY0061201			B
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0055601			
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0034901			
7	CN1	CONNECTOR,BOARD TO BOARD	ENBY0040601	30 PIN,0.4 mm,ETC , ,H=1.0 ,; , ,0.40MM ,STRAIGHT ,MALE ,SMD ,R/TP , ,		
6	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0045501			
7	CN2	CONNECTOR,FFC/FPC	ENQY0013901	35 PIN,0.3 mm,STRAIGHT , , ,; , ,0.30MM ,FPC ,STRAIGHT ,BOTH ,SMD ,R/TP ,[empty] ,		
7	LD1	DIODE,LED,CHIP	EDLH0007901	RED ,1608 ,R/TP ,Indicator,0.4T Red LED		
7	LD2	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
7	R1	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
7	R2	RES,CHIP,MAKER	ERHZ0000458	300 ohm,1/16W ,J ,1005 ,R/TP		
7	SPFY00	PCB,FLEXIBLE	SPCY0104301	POLYI , mm,MULTI-3 , ,; , , , , , , , , ,		
7	VA1	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
7	VA2	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
4	SUMY00	VIBRATOR,MOTOR	SJMY0007202	3 V,.08 A,12*3.4 ,17mm		
4	SUSY00	SPEAKER	SUSY0026501	ASSY ,8 ohm,91 dB,17 mm, ,; , , , , , , ,WIRE		
4	SVLM00	LCD MODULE	SVLM0024701	MAIN ,1.52"(128*128) ,35.78*39.7*2.8 ,65k ,CSTN ,TM ,NT7573 ,Single		C
3	ACGM00	COVER ASSY,REAR	ACGM0091201		Black	N
4	ENZY00	CONNECTOR,ETC	ENZY0015701	3 PIN,3 mm,ETC , ,H=6.5		34
4	MCCC00	CAP,EARPHONE JACK	MCCC0045401	MOLD, Urethane Rubber S190A, , , , ,	Silver	
4	MCJN00	COVER,REAR	MCJN0068501	MOLD, PC LUPOY SC-1004A, , , , ,	Silver	35
4	MLAB00	LABEL,A/S	MLAB0001102	C2000 USASV DIA 4.0	White	40
4	MPBF00	PAD,FLEXIBLE PCB	MPBF0021701	COMPLEX, (empty), , , , ,	Without Color	
4	MPBH00	PAD,MIKE	MPBH0030701	COMPLEX, (empty), , , , ,	Without Color	33
4	SNGF00	ANTENNA,GSM,FIXED	SNGF0026201	3.0 ,-2.0 dBd, ,Internal ,; ,DUAL ,-2.0 ,50 ,3.0		
3	GMEY00	SCREW MACHINE,BIND	GMEY0002001	1.4 mm,3 mm,MSWR3(BK) ,B ,+ ,HEAD t=0.6, HEAD d2.7		F, 41
3	MBJA00	BUTTON,DIAL	MBJA0024501	MOLD, Silicone Rubber KE971-U, , , , ,	Black	K
3	MLAK00	LABEL,MODEL	MLAK0006901			
5	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	Without Color	
7	MCBA00	CAN,SHIELD	MCBA0019001	PRESS, STS, 0.2, , , ,	Without Color	

Level	Location No.	Description	Part Number	Spec	Color	Remark
7	MCBA01	CAN,SHIELD	MCBA0021901	PRESS, STS, 0.2, , , ,	Without Color	

12. EXPLODED VIEW & REPLACEMENT PART LIST

<Main component>

Level	Location No.	Description	Part Number	Spec	Color	Remark
3	SAFY00	PCB ASSY,MAIN	SAFY0210802			M
4	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0075501			
5	ADCA00	DOME ASSY,METAL	ADCA0067001		Without Color	L
5	SUMY00	MICROPHONE	SUMY0003802	FPCB ,-42 dB,4*1.5 ,		
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0133902			
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0092702			
6	BAT100	BATTERY,CELL,LITHIUM	SBCL0001701	2 V,0.5 mAh,CYLINDER ,Reflow type BB, Max T 1.67, phi 4.8, Pb-Free		
6	C100	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C101	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C102	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C103	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C104	CAP,CERAMIC,CHIP	ECCH0007801	4.7 uF,10V ,Z ,Y5V ,HD ,1608 ,R/TP		
6	C105	CAP,CERAMIC,CHIP	ECCH0005602	2.2 uF,16V ,K ,X5R ,HD ,1608 ,R/TP		
6	C106	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C107	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C108	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C109	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C110	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C111	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C112	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C113	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C114	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C115	CAP,CERAMIC,CHIP	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C116	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C117	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C118	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C119	CAP,CERAMIC,CHIP	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C120	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C121	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C122	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C123	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C124	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C125	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C126	CAP,CHIP,MAKER	ECZH0001213	0.47 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C127	CAP,CERAMIC,CHIP	ECCH0005602	2.2 uF,16V ,K ,X5R ,HD ,1608 ,R/TP		
6	C128	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C129	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C130	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C131	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C132	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C138	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C139	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C140	CAP,CERAMIC,CHIP	ECCH0000153	6.8 nF,25V,K,X7R,HD,1005,R/TP		
6	C141	CAP,CHIP,MAKER	ECZH0001106	4700 pF,25V ,K ,X7R ,HD ,1005 ,R/TP		
6	C142	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C143	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C144	CAP,CHIP,MAKER	ECZH0001106	4700 pF,25V ,K ,X7R ,HD ,1005 ,R/TP		
6	C145	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C200	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C202	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C203	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C204	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C205	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C206	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C207	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C208	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C209	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C210	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C211	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C212	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C213	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C215	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C217	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C218	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C219	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C220	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C221	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C222	CAP,CERAMIC,CHIP	ECCH0000259	10 nF,50V,K,X7R,HD,1608,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C226	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C227	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C228	CAP,CERAMIC,CHIP	ECCH0006501	10 uF,6.3V ,K ,X5R ,TC ,2012 ,R/TP		
6	C229	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C230	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C231	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C232	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C233	CAP,CERAMIC,CHIP	ECCH0000391	1 uF,50V ,Z ,Y5V ,HD ,2012 ,R/TP		
6	C234	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C235	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C236	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C237	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C238	CAP,CERAMIC,CHIP	ECCH0007801	4.7 uF,10V ,Z ,Y5V ,HD ,1608 ,R/TP		
6	C239	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C240	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C241	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C242	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C300	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C301	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C302	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C303	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C304	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C305	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C306	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C307	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C308	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C309	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C310	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C311	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C400	CAP,CERAMIC,CHIP	ECCH0003002	10 uF,10V ,Z ,Y5V ,HD ,2012 ,R/TP		
6	C401	CAP,CHIP,MAKER	ECZH0000816	12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C402	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C403	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C404	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C405	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C406	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C408	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C409	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C410	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C412	CAP,CERAMIC,CHIP	ECCH0000183	1.8 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C413	CAP,CHIP,MAKER	ECZH0000802	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C414	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C415	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C416	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C418	CAP,CERAMIC,CHIP	ECCH0000901	2.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C419	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C420	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C421	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C422	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C423	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C424	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C425	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	CN200	CONNECTOR,BOARD TO BOARD	ENBY0040701	30 PIN, mm,ETC , , ,; , .0.40MM ,STRAIGHT ,FEMALE ,SMD ,R/TP ,1.0 ,		
6	CN201	CONNECTOR,I/O	ENRY0006401	18 PIN,0.4 mm,ANGLE , ,H=2.5, Reverse Type		
6	FB100	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FB200	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FB201	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FL200	VARISTOR	SEVY0007001	18 V,- ,SMD ,6ch, 100ohm, EMI Filter Array chip varistor		
6	FL201	VARISTOR	SEVY0007001	18 V,- ,SMD ,6ch, 100ohm, EMI Filter Array chip varistor		
6	FL400	FILTER,SAW,DUAL	SFSB0001301	881.5 MHz,25 MHz,1.8 dB,30 dB,1960 MHz,60 MHz,2.3 dB,12 dB,2.0*1.6*0.68 ,SMD ,869M~894M,1930M~1990M,10p,B,150_82,150_18,GSM 850+PCS Rx ,; ,881.5, 1960 ,2.0*1.6*0.68 ,SMD ,R/TP		
6	FL401	FILTER,SEPERATOR	SFAY0010101	850.1900 ,900.1800 ,2.0 dB,2.0 dB,2.0 dB,2.0 dB,ETC ,Dual Band ASM, 2.5x2.5x1.2		
6	J100	CONN,SOCKET	ENSY0014601	6 PIN,ETC , ,2.54 mm,H=2.3		
6	L200	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L201	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L202	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L204	INDUCTOR,CHIP	ELCH0010302	100 nH,J ,1608 ,R/TP ,chip coil		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	L205	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	L206	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	L400	INDUCTOR,CHIP	ELCH0004711	22 nH,J ,1005 ,R/TP ,		
6	L401	INDUCTOR,CHIP	ELCH0004707	1.5 nH,S ,1005 ,R/TP ,		
6	L402	INDUCTOR,CHIP	ELCH0004708	2.7 nH,S ,1005 ,R/TP ,		
6	L403	INDUCTOR,CHIP	ELCH0004726	1.5 nH,J ,1005 ,R/TP ,		
6	L404	INDUCTOR,CHIP	ELCH0009110	5.1 nH,J ,1005 ,R/TP ,chip coil		
6	L405	INDUCTOR,CHIP	ELCH0004714	18 nH,J ,1005 ,R/TP ,		
6	Q100	TR,BJT,ARRAY	EQBA0000406	SC-70 ,0.2 W,R/TP ,CDMA,Common use		
6	Q101	TR,BJT,NPN	EQBN0007601	SOT-23 ,0.15 W,R/TP ,EMT3		
6	Q102	TR,BJT,PNP	EQBP0006402	VSM ,100 mW,R/TP ,EPITAXIAL PLANAR PNP TRANSISTOR		
6	Q200	TR,BJT,ARRAY	EQBA0004902	TES6 ,200 mW,R/TP ,NPN/PNP dual, Vo1=50V, Io1=100mA, Vo2=-50V,Io2=-100mA		
6	R100	RES,CHIP,MAKER	ERHZ0000244	22 Kohm,1/16W ,F ,1005 ,R/TP		
6	R101	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R102	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R103	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
6	R104	RES,CHIP,MAKER	ERHZ0000507	68 Kohm,1/16W ,J ,1005 ,R/TP		
6	R105	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R106	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R107	RES,CHIP,MAKER	ERHZ0000438	20 Kohm,1/16W ,J ,1005 ,R/TP		
6	R108	RES,CHIP	ERHY0000278	82K ohm,1/16W,J,1005,R/TP		
6	R109	RES,CHIP,MAKER	ERHZ0000438	20 Kohm,1/16W ,J ,1005 ,R/TP		
6	R110	RES,CHIP,MAKER	ERHZ0000438	20 Kohm,1/16W ,J ,1005 ,R/TP		
6	R111	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R112	RES,CHIP,MAKER	ERHZ0000206	10 ohm,1/16W ,F ,1005 ,R/TP		
6	R113	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R114	RES,CHIP	ERHY0000278	82K ohm,1/16W,J,1005,R/TP		
6	R115	RES,CHIP,MAKER	ERHZ0000206	10 ohm,1/16W ,F ,1005 ,R/TP		
6	R116	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R117	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R118	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R119	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R130	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R131	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R132	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R133	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R136	RES,CHIP,MAKER	ERHZ0000506	6800 ohm,1/16W ,J ,1005 ,R/TP		
6	R137	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R138	RES,CHIP,MAKER	ERHZ0000477	390 Kohm,1/16W ,J ,1005 ,R/TP		
6	R139	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R200	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R201	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R202	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R203	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R204	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R205	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R206	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R207	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R208	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R209	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R210	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R211	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R212	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R215	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R216	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R217	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R218	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R219	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R220	RES,CHIP	ERHY0003401	1800 ohm,1/16W ,J ,1005 ,R/TP		
6	R221	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R222	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R224	RES,CHIP,MAKER	ERHZ0000450	240 Kohm,1/16W ,J ,1005 ,R/TP		
6	R225	RES,CHIP,MAKER	ERHZ0000460	30 Kohm,1/16W ,J ,1005 ,R/TP		
6	R226	RES,CHIP,MAKER	ERHZ0000435	20 ohm,1/16W ,J ,1005 ,R/TP		
6	R234	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R294	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	R295	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	R296	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	R297	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	R298	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	R299	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R300	RES,CHIP,MAKER	ERHZ0000476	39 Kohm,1/16W ,J ,1005 ,R/TP		
6	R301	RES,CHIP,MAKER	ERHZ0000438	20 Kohm,1/16W ,J ,1005 ,R/TP		
6	R302	RES,CHIP,MAKER	ERHZ0000438	20 Kohm,1/16W ,J ,1005 ,R/TP		
6	R303	RES,CHIP,MAKER	ERHZ0000476	39 Kohm,1/16W ,J ,1005 ,R/TP		
6	R304	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R305	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R306	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R307	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R309	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R310	RES,CHIP,MAKER	ERHZ0000454	27 Kohm,1/16W ,J ,1005 ,R/TP		
6	R403	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	SC400	CAN ASSY,SHIELD	ACKA0002801		Without Color	
6	SW400	CONN,RF SWITCH	ENWY0004401	,SMD , dB,H=2.2		
6	U100	IC	EUSY0304302	64Mb NOR63 3V+utRAM32Mb ,56 PIN,R/TP ,W7 L9 H1.2		
6	U101	IC	EUSY0176402	Flip-Chip CSP ,9 PIN,R/TP ,Audio Power Amplifier		
6	U102	IC	EUSY0300101	WQFN ,10 PIN,R/TP ,Small package Dual SPDT analog Switch, PB-Free		
6	U103	IC	EUSY0317401	BGA ,189 PIN,R/TP ,E-Gold voice		
6	U200	IC	EUSY0238702	TSOPJW-12 ,12 PIN,R/TP ,3PORT Charge Pump(AAT2154 Low cost version)		
6	U201	IC	EUSY0292601	DFN ,8 PIN,R/TP ,Li-ion charger IC, 8 Ld 2 x 3 DFN, Pb-free		
6	U300	IC	EUSY0320801	QFN ,20 PIN,R/TP ,FM Tuner Chip, 3*3*0.57, Pb Free		
6	U301	IC	EUSY0142501	LLP ,8 PIN,R/TP ,Dual 105mW Headphone Amplifier		
6	U302	IC	EUSY0223002	HVSOF5 ,5 PIN,R/TP ,150mA CMOS LDO WITH OUTPUT CONTROL / 2.8V		
6	U303	IC	EUSY0300101	WQFN ,10 PIN,R/TP ,Small package Dual SPDT analog Switch, PB-Free		
6	U400	PAM	SMPY0014001	35.5 dBm,56 %, A, dBc, dB,6x6x1.15 ,SMD ,Tri Band		
6	VA200	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA201	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA202	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA203	VARISTOR	SEVY0003801	18 V, ,SMD ,		
6	VA204	VARISTOR	SEVY0003801	18 V, ,SMD ,		
6	VA205	VARISTOR	SEVY0003801	18 V, ,SMD ,		
6	VA206	VARISTOR	SEVY0003801	18 V, ,SMD ,		
6	VA207	VARISTOR	SEVY0003801	18 V, ,SMD ,		
6	VA208	VARISTOR	SEVY0003801	18 V, ,SMD ,		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	VA209	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA210	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	X100	X-TAL	EXXY0018404	26 MHz,10 PPM,8 pF,40 ohm,SMD ,3.2*2.5*0.6 ,12ppm at -30'C ~ +85'C, C0 1.0pF, C1 3.6fF ,; ,26 ,10PPM ,8 , , ,SMD ,R/TP		
6	X101	X-TAL	EXXY0004602	.032768 MHz,20 PPM,12.5 pF,65000 ohm,SMD ,6.9*1.4*1.3 ,		
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0091902			
6	C133	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C134	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C135	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C136	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C137	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	LD100	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD101	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD102	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD103	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD104	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD105	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD106	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD107	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD108	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD109	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	R120	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R121	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R122	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R123	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R124	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R125	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R126	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R127	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R128	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R129	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R227	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R228	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R229	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R230	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		

12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R231	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R232	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R233	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R235	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R236	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R237	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	SPFY00	PCB,MAIN	SPFY0153601	FR-4 ,0.8 mm,BUILD-UP 6 , ,; , , , , , , , , ,		
6	U104	IC	EUSY0250001	Leaded ,4 PIN,R/TP ,Hall IC		

12.3 Accessory

Level	Location No.	Description	Part Number	Spec	Color	Remark
3	SBPL00	BATTERY PACK,LI-ION	SBPL0089504	3.7 V,750 mAh,1 CELL,PRISMATIC ,WLT, BATT, Latin America Label, Pb-Free ,; ,3.7 ,750 ,0.2C ,PRISMATIC ,43x34x46 , ,BLACK ,Innerpack ,Latin America Label	Black	36, O
3	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0003213	; ,10mW ,16 OHM ,105dB ,10KHZ ,450HZ ,[empty] ,BLACK,EARPHONE HOUSING:SILVER ,18P MMI CONNECTOR ,LOW COST STEREO,18P(5P) ,		
3	SSAD00	ADAPTOR,AC-DC	SSAD0024601	100-240V ,5060 Hz,5.1 V,.7 A,NOM ,AC-DC ADAPTOR ,; ,85Vac~264Vac ,5.1V +0.15V, -0.2V ,700mA ,5060 , ,WALL 2P ,I/O CONNECTOR ,		

Note